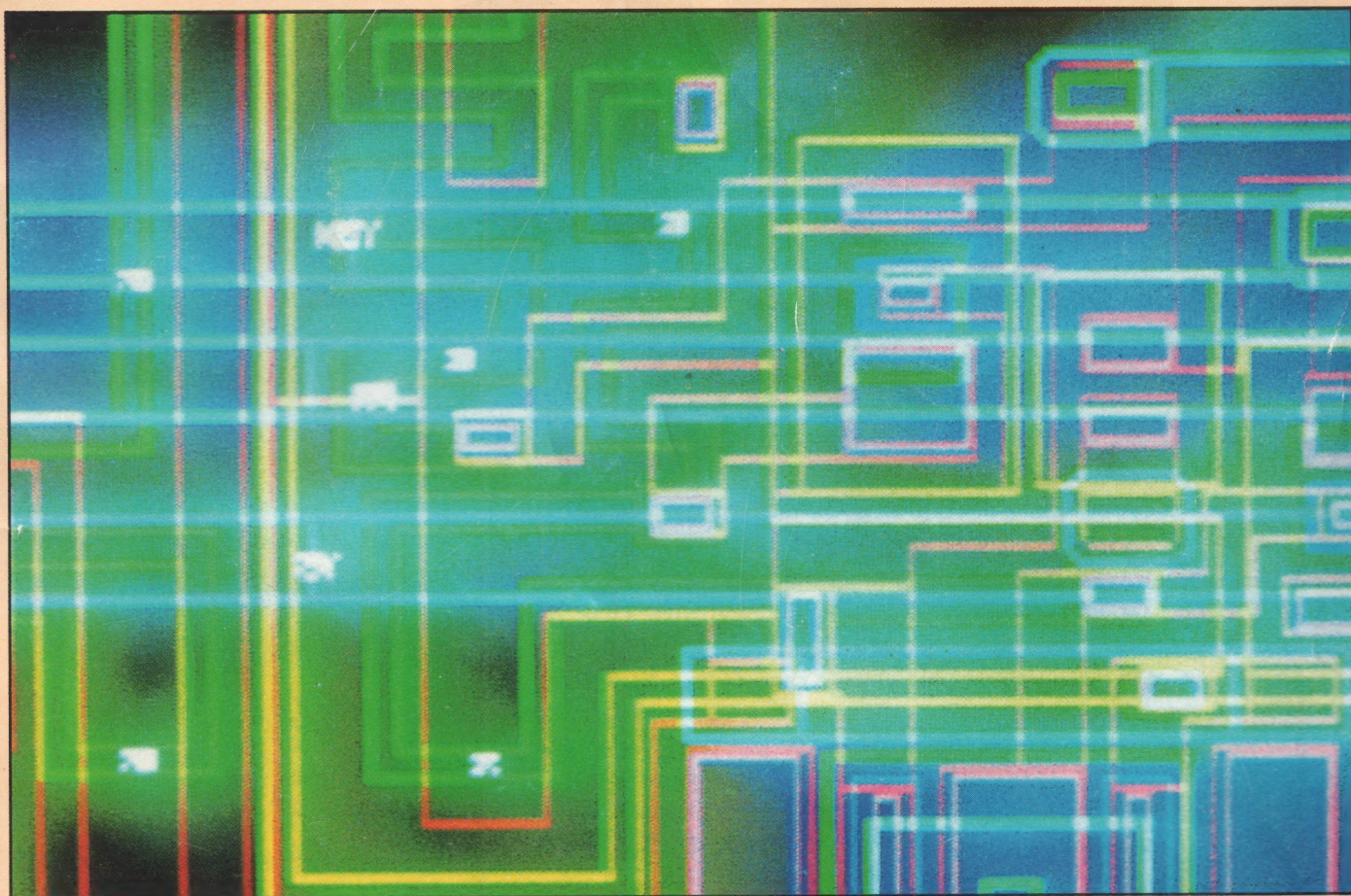
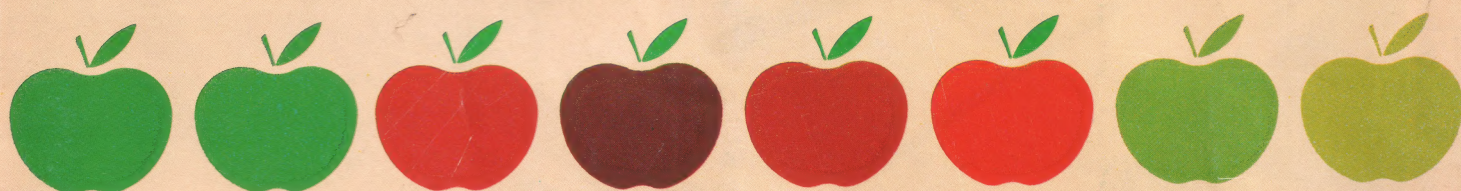


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The Australian Apple Review



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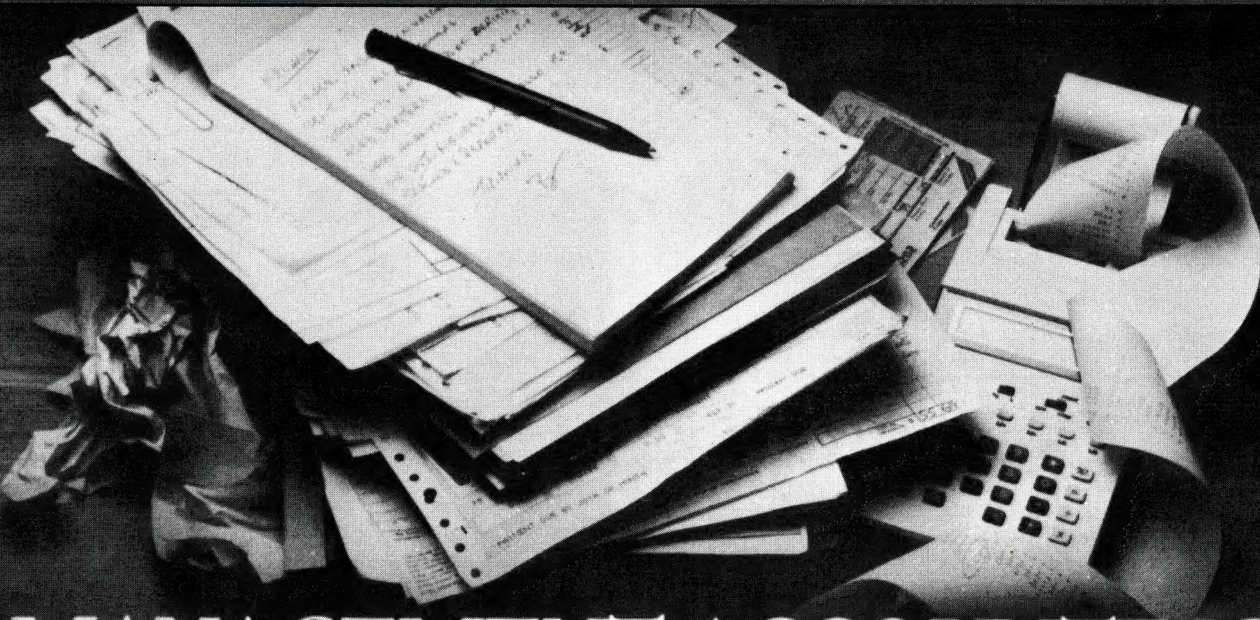
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The Australian Apple Review

Vol 3 No 5 May 1986



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The news from the United States is that Apple is once more on the warpath against Apple clones or near offers. An injunction has been issued against a Hong Kong company - with representative offices in California - attempting to ban it from selling a computer called the Laser 128 in America. The Laser is sold in Australia by Dick Smith as the Cat but the 128 version has still not reached these shores.

The Apple case is that the Laser 128, which sells for half the recommended retail price of the genuine Apple, infringes their copyrights and their patents.

The Laser case is that the machine has been passed by American customs - ever vigilant to prevent the importation of any rip-off machines - which gives the Laser 128 a sort of minor respectability.

Secondly, they say there is no infringement of Apple copyright or patents. They are so keen to prove this that they are forcing the issue into court in order to have the matter finally resolved.

Editorial

The situation in Australia is slightly different. The Cat (nee Laser) was, nearly two years ago, the cause of some legal correspondence between Apple in Australia and Dick Smith Electronics and, indeed, a hearing was at one time listed between the two companies, but the matter was settled, apparently to the satisfaction of both parties, out of court.

However, if Apple in Cupertino has taken out a legal injunction against the Laser (our Cat) in the United States it seems axiomatic that Apple in Australia will have to follow the same proceeding if and when the Cat 128 appears in Australia.

Even more interesting will be the actions of the Apple office in Hong Kong. That is where the Laser is made. And the Laser is prominently on sale in,

at the very least, the notorious Golden Shopping Centre of Shamshuipo and probably many other outlets as well. Apple Hong Kong is already involved in a wide series of law suits against importers of Taiwanese clones and reprinters of copyright materials, and their general attitude appears to be that they want to fight the pirates into the ground.

As the copyright and patent law in Hong Kong is very similar to that of Australia we, presumably, can expect to see similar action there as well if and when the Laser 128 arrives.

Our attitude on this matter is fairly well known.

If a computer uses the 6502 chip and if it is set up to use all of the Apple II programs and if it is widely advertised as being totally compatible then, in our limited legal opinion, it is in breach of the copyright laws as we know them and as they have been amended. It will be most interesting to see what transpires. Certainly, and once again, the lawyers will have a picnic. *Gareth Powell*

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Bits and Bytes

IT'S INTERESTING TO SEE that IBM are still trying to make a success of their personal computer, the JX. This Japanese designed and made machine was launched in a large hurry last year in order to catch the educational market. It has been something less than a major success.

Now IBM have added a 10 megabyte fixed disk, 40 more programs and have had *Lotus 1-2-3* adapted to run on it. Whether this will, in the death, make any difference is open for a lot of debate.

First of all the computer was designed to work using a cartridge as well as disk input - and as far as we know no cartridge has ever been offered on the Australian market.

Secondly, it is not truly IBM compatible - despite its name.

Thirdly, the disk drives, which were originally choked down to 360K, are now being brought up to 720K, which means that current owners face the need to upgrade part of the machine that had been downgraded on purpose. All slightly confusing and not guaranteed to set potential owners' minds at rest.

It is interesting that the track record of IBM in small personal computers is less than magnificent. They got it totally wrong with the IBM PC Junior and their marketing success with the JX suggests this computer still requires some basic design reconsideration.

Clever Doc

The doctors of Australia now have a software package for the Macintosh to help their accountancy headaches. This program is called *Dr Mac* and is very simple to set up to take care of the basics of accounting and to control such things

as referral patterns, patient visits and services provided. (See *Australian Apple Review* March 1986.) The program itself costs around \$2,500. Don't phone us, phone (02) 526 1404.

It's interesting that this program exists but it really is only the first step. Plainly, it can't be long before we have some artificial intelligence program which will be suitable for doctors. When the Apple II first came out, there was an artificial intelligence program connected with cancer of the bone marrow. This was a demonstration program.

Since then a vast amount of work has been done with artificial intelligence and expert systems for mainframes and mini computers. Not too much for personal computers.

The problem is that a vast amount of power and memory is required. The new Macintosh, however, is easily able to supply these and we should see some artificial intelligence programs for vets and then for doctors some time in the near future.

Already in the USA Colgate-Palmolive have provided a series of artificial intelligence programs for veterinarian surgeons.

Where vets lead can doctors be far behind?

Cobol for the Mac

There may well be programmers out there who would like to use Cobol on the Macintosh. We haven't ever met one. But we work in a fairly restricted social circle.

For those programmers who want to use Cobol on the Apple, *MacCobol* provides access to 386 of Mac's 512 ROM routines. For more information

please call (02) 526-1404. The public relations company handling this account plainly are not overly familiar with programming languages. So for their benefit we'll just point out one more time it's spelt Cobol and not Cobl.

Language debugging

We've just been told that the Boston Systems Office is offering high level language debugging support with their new line of C compilers designed for the Motorola 68000.

However, programmers working on the Macintosh should not at this stage get their knickers in an excited knot. The program is selling at \$US8750 and, as far as we can ascertain, only works on a Vax. Still, if you want to follow it you can phone (03) 528 2711 and ask them what it's all about.

Australian communications network

For those of you who were asleep at the time, there was once an Australian computer communications network called The Australian Beginning. This was started in Melbourne and went through all sorts of dramas. It had a series of owners and the last real news we heard was the removal from the premises of the computers which ran the system because the company was not able to keep up with the payment of the leasing charges. There was no illwill on either side involved in this, it was purely a commercial situation.

We went and looked at the system on two occasions, once at the beginning and the other time just before it was getting into strife. While we were immensely impressed by the basic concept, it was obvious that the customers were not there in the numbers that would make the service a viable one.

And the conclusion that could be drawn from that was that it would be a long time before any system of this sort ever made it in Australia. And the

conclusion would of course have been wrong.

Viatel was launched amongst a considerable amount of doubt in the trade. After all, it's been tried in many other countries and almost never been a success.

Australia was the exception. Viatel was a roaring success from day one. There are now well over 12,000 users of Viatel and the number increases by the day. Given that fact, it therefore seems possible that a service like The Australian Beginning - if it had sufficient financial backing and enough expertise - would have a place to play in the communications set-up of Australia.

And that is indeed what is happening. But we've received a series of press handouts about the Teledata Computer Communications Network. Nowhere does it suggest that it has anything to do with The Australian Beginning, but looking at the address and the way in which the system is going to operate it seems to us more than somewhat likely that this is The Australian Beginning revived once again.

There seems to be a fairly heavy group of Melbourne entrepreneurs behind it and it would appear that this time it has better than a fighting chance of success. However before we all leap up and down at the thought of a network operating in Australia, we need to ask a few questions.

Cost

The first is the cost. Bearing in mind the track record of this system in the past, it seems fairly strong to ask a commercial company to pay \$150 joining fee or an enthusiast to pay \$50. On top of that there is a service fee which is \$5 commercial, \$2 home students. And then on top of that there is a usage fee.

The hourly rates if you live in Melbourne are \$5 an hour until 8 o'clock in the morning, \$13 an hour during working time and \$8 an hour during the evening. If you want to go through

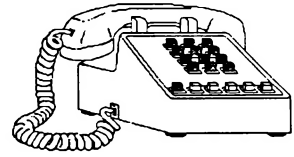
AusPac - and you almost certainly will if you live outside the Melbourne metropolitan area - then the charges leap up more than somewhat. For example from midnight till 8 o'clock it becomes \$10, from 8 till 6 it becomes \$15, and from 6pm until midnight you're back to \$13 again. At the weekend the charges during the day are \$13 and at night are \$10. On top of all that there appears to be an extra charge for documentation which is a for a ring binder with a reference tabs at \$28.

These charges are nothing out of line for an ordinary system. This is not an ordinary system. It's one that has a track record of not providing the goodies when promised. None of the services that are promised so far make one leap up and down with delight. Amongst the overseas data banks they publicise, the only one listed so far is the Overseas Airlines Guide which we normally access through The Source.

If the OAG they are offering is the same as the American one, then their claim that it "enables you to choose, without bias, the lowest cost airfares that meet your travel needs in terms of time, comfort and brand preference" is incorrect. The OAG is in the main focused on American travel, although it does cover some - but by no means all - Asian Pacific connections. The one thing it does not do is show the prices that are available in Australia to the Australian purchaser. This information is vital at the moment, when travel agents themselves have difficulty keeping up with the price changes which arrive every day.

Telex worthwhile

They also offer electronic bulletin boards, an ability to communicate on line with another computer, and a telex system, which may well make the whole system worthwhile for any small business that wants to use telexes but doesn't want to buy a telex machine. Working on the basis that a telex machine is going to cost you somewhere



over \$2,000 and not more than \$3,000, you'd be able to get your money back relatively easily if you were a serious telex user.

Public domain

There is also a range of accessible public domain software. Their story is there are 600 programs for the Apple II. As they are using the Ward Christensen these programs are no doubt easily downloadable. But from the descriptions they look very similar to the public domain software that was available on the Apple in 1978 and 1979. The program to teach yourself Morse code, the Apple piano and the Antenna design are as far as we can recollect from that era. They're not anything to get excited about.

An area which may be of interest is the Commodore magazine - not ours but the opposition - which has gone online and allows people to read pieces of the magazine which didn't appear because of lack of space.

All of which sounds as though we are against Teledata. In fact the reverse is true. We think that anybody who can get together a good computer communications system and make it work in Australia should get all the support in the world from us. But having seen the dramas involved in The Australian Beginning and the paucity of information that was available on that network, and now looking at the current offerings on Teledata, we feel it has a long way to go before it becomes true value for money. Unless and except you are using a fair amount of telexes and you don't want a telex machine.

We are more than happy to throw the pages of the *Australian Apple Review* open to the managers of Teledata if they would like reply with an article in the next issue explaining in detail what benefits there are available for Apple users who link up to Teledata.

Wordprocess like the Mac

Apple IIe and IIc users can now do their wordprocessing in the same environment as Macintosh word processors. *MultiScribe* uses the double high resolution mode to produce a full-featured word processor rivaling those available for the Macintosh for resolution, clarity and ease of use. *MultiScribe* supports proportional spacing, as well as a wide variety of fonts. For the first time Apple II users can mix different fonts in their word processing files and see the results on the screen!

As with *MacWrite*, fonts can be styled. Any font can be written in boldface, underline, italics, outline, shadow, subscript, superscript, uppercase, lowercase or any combination of the above. In addition, users can edit existing fonts or create their own, using *MultiScribe's* font editor.

MultiScribe is in keeping with Apple's human interface guidelines, featuring easy to use pull-down menus for command selection, scroll cars, dialog boxes and alert messages. *MultiScribe* is Apple-Mouse-based but not Apple-Mouse-dependent. Users without a mouse can use either a "keyboard mouse" (pull-down menus activated by ESC and arrow keys) or open-apple keys to select commands.

Formatting of text is done through the use of rulers. Tabs, margins, line spacing and text justification are set through controls conveniently located on the rulers.

Other features include cut, copy and paste functions, find and replace, the ability to invert the screen (dark text on light background or light text on dark background), print merge for linking long files and the ability to support a variety of commonly-used printers.

MultiScribe is available from the Australian Distributor, Techflow Pty. Limited., PO Box 4 Woodford 2778, phone 047 58 6924. Telex 71333 TECFLO. Dealer enquiries are welcome.

Upgrading with boards

In the American magazine *Computer Shopper* a regular columnist, Don Lancaster, suggested that the best way to make a II+ into a IIe is to unplug the cord from the II+, then discard everything but the cord, then find a IIe that's missing a cord and plug yours into it.

This merely emphasises the fact that upgrading from a II+ to a IIe is extremely difficult and a game that is hardly worth the candle.

A board in America called the R68, made by Rapid Systems of Seattle, adds the Motorola 68000 processor to an Apple II+ or IIe. Basically this board is intended for software development and for co-processing and for teaching software development using the 68000 chip. The processor can be either 8 Megahertz or 10 or 12 Megahertz.

The board can also include 48 to 256K bytes of memory, four 8 bit interface ports between the Apple and the 68000 chip, two 8 bit input/output ports, two 16 bit programmable

counter/timers and a serial port. Along with it comes a stack of software full of useful utility. It's not the sort of board that everyone on the block is going to get.

Another unusual card for the Apple II is called the VIP which stands for Very Intelligent Peripheral. This comes from a company in the US called Bukowski Robotics in Arizona. It is an Apple compatible Robotics controller card that can be used either as a stand-alone controller or as a co-processor in the Apple II.

You can write your control programs for your robots in Basic or other languages and then load the program into the card from your computer's disk drive. The card can then be put into the robot. This card has a 65C02 micro processor - just like the Apple IIe/c - 60 input output lines, two timer/counters and 8K bytes of RAM. There are also a stack of options to tailor the card precisely to a customer's needs.

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Apple excels in software awards

Recently the Software Publishers Association presented its 1985 "Achievement In Software" awards. These are awarded for many categories, ranging from "best software product" to "best adaptation from another medium."

The winners were nearly all for Apple and Macintosh, whether because the programs are better or because the computers are better and so lend themselves to better programs.

The programs that are not Macintosh are designed to make the IBM look as if it's a Macintosh or Apple.

* **Best software product:** *Windows*, from Microsoft. This is designed to make the IBM work like a Macintosh. *Windows* also won for best technical achievement, and again for best user interface.

* **Best business product:** *Excel*, from Microsoft. The program, for the Apple Macintosh, consists of a spreadsheet that can double as a data base, combined with graphics. *Excel* also won

the award for best productivity product.*

* **Best learning product:** *Where in the World is Carmen San Diego*, for Apple II computers from Broderbund. This was reviewed in our last issue (April). As players chase an international thief around the world they learn about geography and how to use almanacs and other reference books.

* **Best creativity product:** A tie - between *Deluxe Paint*, a paint program from Electronic Arts, and *Newsroom*, from Springboard Software, which lets users design, write, lay out and print small newspapers and newsletters. *Newsroom* is available for the Apple II.

* **Best simulation product:** *Jet*, from Sublogic. This is the sequel to *Flight Simulator*, both of which are for the Macintosh. Instead of flying a Cessna over San Francisco, the player can take the controls of a fully armed F-16 on a night mission to, say, Tripoli.

* **Best entertainment product:** *Deja Vu*, for Macintosh, from

Mindscape, and in the category best new world, *Deja Vu* won again.

* **Best new use of a computer:** *Pagemaker*, from Aldus Corp. *Pagemaker* is a page description program for the Macintosh and Laserwriter, for desktop publishing.

* **Best sound:** in the subcategory titled effects, music, the winner was (a drum-roll, please) *Deluxe Music Construction Set*, Macintosh version, from Electronic Arts. This program allows even tone-deaf non-musicians to compose a score, hear it played by the Mac's little four-voice silicon symphony, and then print it as sheet music.

* **Best graphics:** *Deluxe Paint*, Commodore Amiga version, from Electronic Arts.

* **Best adaptation from another medium:** *The New Electronic Encyclopedia* from Grolier.

* **Best adaptation to a new computer format:** *One-on-One*, a basketball game re-programmed for the Amiga's graphics and sound. 🍏

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ESSENTIAL DATA DUPLICATOR 4

Getting it done properly and on time - *MacProject*

by Gareth Powell

THE BASIC idea of project management has been around for many, many years. It has appeared under many different names, under many different guises. Critical Path Analysis was but one of the many terms.

This system of getting things done in the right order at the right time came into prominence during the Second World War when it was used to plan D-Day. Without Critical Path Analysis the boats would still be waiting to head for Mulberry Harbour.

The story is that it was used by Ramses II when he built his pyramids. Certainly many early Egyptian parchments show illustrations which, to a not overly suspicious mind, could be taken to be layouts for critical path analysis.

What has brought project management - critical path analysis, call it what you will - into full flower is the advent of the personal computer.

With the personal computer a critical path analysis for any project can be laid down with great ease, and the resulting flow chart will, beyond peradventure, help any project - no matter what its size - to be brought to fruition.

In the manual for MacProject they use as an example a barbecue - planning, arranging, preparing and sitting down to eat. As you can see from the illustration it lays out a total plan of action in the correct order from the very start - make the fire, set the table, cook the rice, make the salad, broil the steaks and eat the dinner. It puts them all in their correct order considering dependencies, availability of the sources, duration of tasks and time for completion.

This is not as daft an example as it might appear. It shows very clearly in microcosm how project management can help you work out your priorities,

assemble the material and the labour in the right place at the right time, keep to deadlines and bring a task to a successful conclusion.

When I was in the army and fighting for King and country (and that dates you) we were taught the same method but with pads of paper and pencils and much rubbing out and pasting over. The imaginary task we were given was setting up what might be termed, ahem, a house of ill repute. This became a source of much merriment among the crude and licentious British soldiery.

Silly and childish though it might have been, it worked, and I have remembered the basic rudiments of project management to this day.

MacProject is an Apple product, although it was produced by a company called SoloSoft and written by Debra Willrett and Stephen D. Young.

Up until 1980 Apple were heavily

into this scene of selling software under their own label and, indeed, at one time they were the biggest software publishers in the world. Either *MacProject* is a hangover from their old style of company management or it is an indication of a new direction.

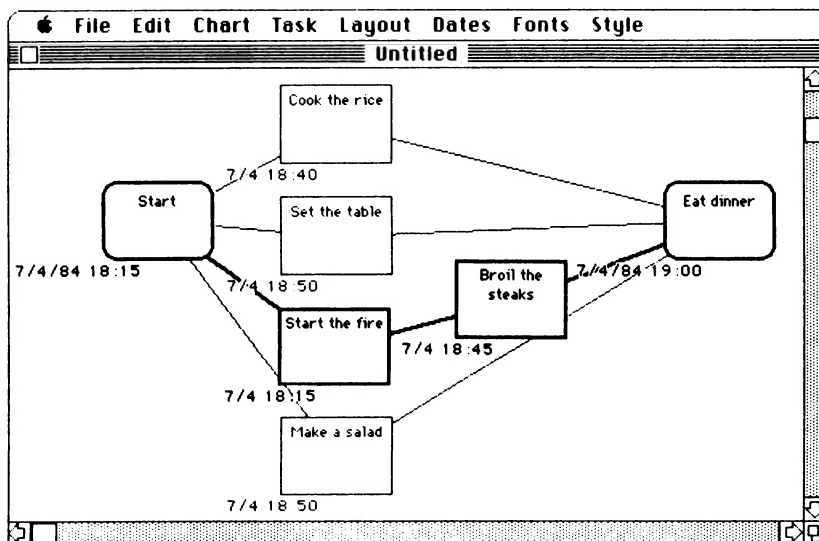
Probably it is only psychological but I have always felt happier with a program issued under the Apple label. I somehow feel it is likely to work better. Certainly the documentation is nearly always good. The documentation and packaging for *MacProject* are no exception. They are absolutely first rate.

The package comes with three disks, an audio cassette and an excellent manual. One of the disks is a guided tour, and I know of no better way of getting the feel of any program than one of these Macintosh guided tours.

There are some unusual aspects of this program.

The first is that when you click on the About MacProject in the pull-down

Using MacProject to plan a barbecue: what do you do if someone used the last of the charcoal and didn't replace it?



menu, not only do you get the names of the producers, but you also get a guide to the program itself. A sort of Desktop Help menu. It lists the following capabilities and how to achieve them.

Draw name task boxes. You drag diagonally from the top left corner to the bottom right corner of the box and then type in the name of the task that you are going to include in the box.

Create milestone. You draw a box, then select it, then choose a milestone from the task menu.

Connect dependent tasks and milestones. Drag left to right from inside the first task box to inside the task box that depends on it and so on.

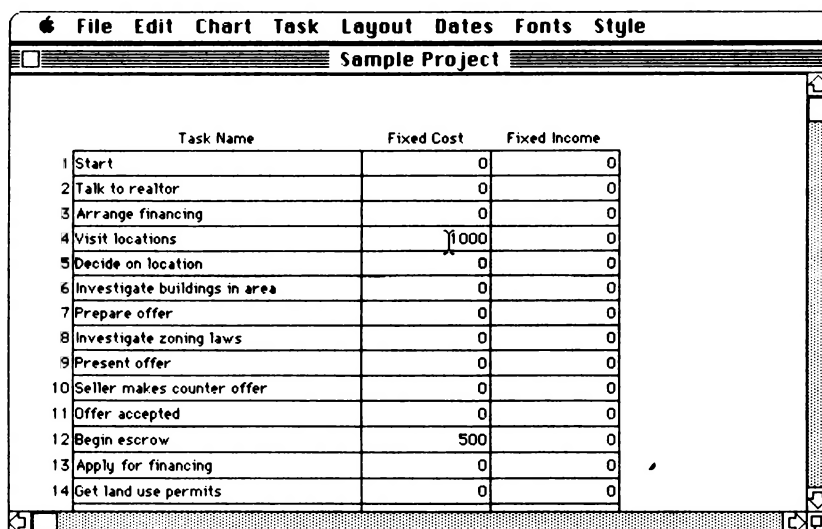
It's a very neat simple guide that is always available by pulling down the screen and clicking. This seems to be a very worthwhile addition to any program which is basically simple but where an occasional jog of the memory is helpful. Perhaps Apple might consider including it in their standard programmer's guides.

The guide has built in a series of examples.

Amongst the sample task flows is one called MP5 which involves the making of a video movie - a very simple video movie. The critical path flow - as partially shown in our illustration - runs across two pages, and manages to have the project completed precisely on time.

The project concerns a movie being made for a company called Nutro Foods. If you follow it from beginning to end you will have a very precise and real idea of how project management works on a task which is still relatively simple.

The principles however apply to tasks of immensely greater magnitude and this program is currently being used by one of the major contractors involved in the Darling Harbour scheme in Sydney. Note this does not mean the Darling Harbour project is guaranteed to be completed on time or to budget. It is just that everyone will be very clearly aware of where they are going wrong and why at every stage of the project.



Task Name	Fixed Cost	Fixed Income
1 Start	0	0
2 Talk to realtor	0	0
3 Arrange financing	0	0
4 Visit locations	1000	0
5 Decide on location	0	0
6 Investigate buildings in area	0	0
7 Prepare offer	0	0
8 Investigate zoning laws	0	0
9 Present offer	0	0
10 Seller makes counter offer	0	0
11 Offer accepted	0	0
12 Begin escrow	500	0
13 Apply for financing	0	0
14 Get land use permits	0	0

will be very clearly aware of where they are going wrong and why at every stage of the project.

There is a second example on the demonstration which has a lot of charm. It is for a company called Real Wood Cabinetry which needs a new office. Anybody who has ever had to move office will know how appalling a task that can be.

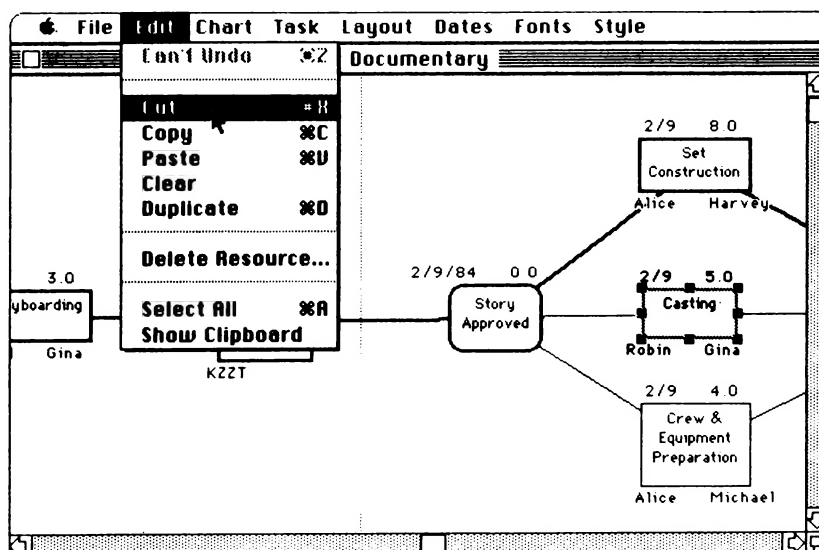
Using *MacProject* you can at least make sure that what has to happen at a given time is listed, annotated and made very clear.

The point that has to be got across is that *MacProject* is a totally professional tool. It follows all of the standard formats for project management. It is,

despite the fact that it is tremendously easy to use, extremely powerful and the ability to integrate the program with several other Macintosh programs makes it ideally suited for anyone who is involved in getting something done by a target date.

And that is the best definition we know of project management and critical path analysis.

It is getting a task done the best way for the best price in the shortest possible time. If you have a major project looming up ahead of you there is no doubt whatsoever that *MacProject* will help to get the task done the best way for the best price in the shortest time. Who could ask for anything more? 



Though I speak with the voice of angels

by Gareth Powell

THE NEXT MAJOR breakthrough we are going to achieve with computers is in voice recognition, voice synthesization and voice control. At the moment this area of computers stands exactly where personal computers stood at the beginning of 1978. A scene of excited experimentation with amazing possibilities which are only now becoming even reasonably clear.

It is known that IBM already has a voice recognition peripheral which will recognise 5,000 words of command.

It is known that sophisticated voice recognition systems have been tested in more applications than even your fertile imagination can think of.

It is known that in many applications the ability to use voice control would turn the personal computer from a keyboard dependent machine to something very closely approaching a free spirit.

Why then do we not all have voice recognition systems on our computers so that we can share in this wonderful revolution?

The three answers are memory, memory, memory.

For voice recognition to work properly, to work well, to work accurately and all the time you need an immense amount of random access memory in the computer. The more extensive the memory, the subtler the digitization will be, the larger the vocabulary will be and, most important, the faster the response time.

Think not in multiples of 16 K for your random access memory.

For true voice recognition - that is the ability of a machine to recognise your voice, and your voice only, and then act on a complex series of instructions - you are talking in megabytes of memory, possibly even in gigabytes.

When Fred Wang, the charismatic head of Wang Laboratories was here recently he said he didn't see voice recognition being truly viable in less than ten years, mainly because of the memory barrier.

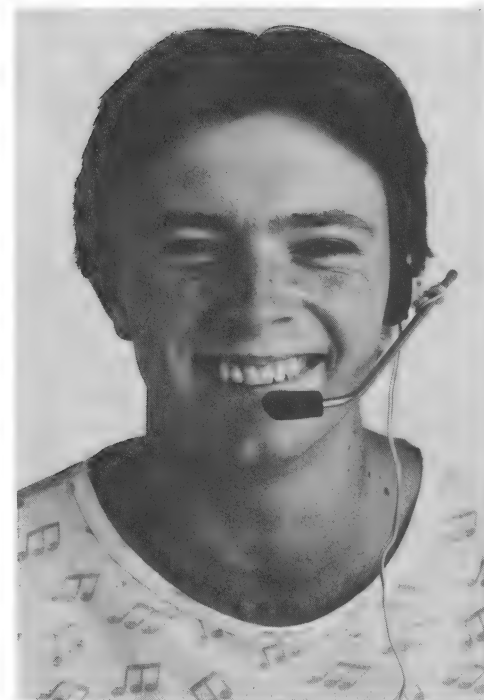
But in computers, as Fred Wang should know better than anyone else, events have an amazing way of catching up and then accelerating beyond predictions. Now that the megabit chip is alive and well and awaiting use it might be the time period could be shortened to less than seven years.

Indeed, there are many observers who believe that a viable voice recognition system in the full meaning of that term will be with us in less than five years.

My own view is that we will see it working, and working well, in the 80s.

If you want to see for yourself how far this development has got you need to experiment. It was the same in the early days of personal computers.

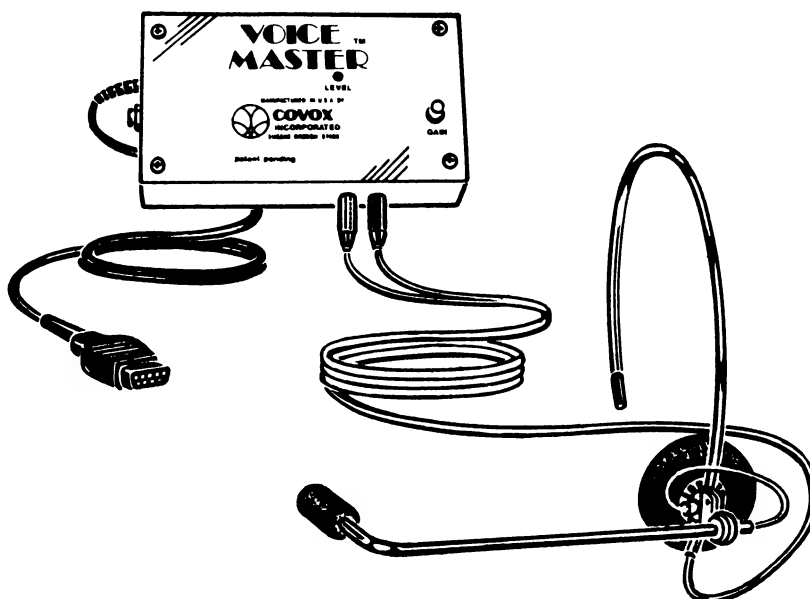
Happy user



Experimentation was the only way to learn, the only way to know.

There is nothing like hands on experience to show you what has been done, what can be done, what will be done.

If you are an Apple II owner you are singularly lucky because, in the great tradition of that computer, Pactronics has imported into this country the Covox



Sound Master kit and are selling it at a price which is reasonable in the extreme and very attractive to experimenters. As in a recommended retail price of \$149 for the full Voice Master kit and \$69.95 for the Sound Master portion.

For your money, you get a microphone and headset which makes you look like a pilot in a Cessna, a Sound Master board that fits in Slot 4 of your Apple and the Voice Master control box which feeds in through the paddle socket. (Note that you can use the Soundmaster part of the kit but not the VoiceMaster with your IIC. Note that you also need at least 64 K of memory.) You also get a demonstration disk with music, counting and speech in three languages - English, Spanish and Chinese.

There are also two manuals.

These manuals are, in a very real sense, symbols of where voice recognition stands at the moment. They are printed on rubbish paper which would not be accepted by a suburban giveaway advertising rag. The text is typewritten and fairly well peppered with errors. The current errata sheet lists 13 errors and there are others.

But it does not matter. Covox have plainly trimmed every corner possible to be able to give enthusiasts a true voice digitisation and recognition system which will not break the bank. They plainly want as many people as possible to experiment with the system, to suggest improvements, to work at the outer limits, to improve the product. God bless them.

The following is just a guess. If some voice compression techniques Covox are working on become available, and if the Apple IIe is expanded to seven megabytes of Ram - which is practically possible - then the Apple IIe might well become a machine at the cutting edge of experimentation with human speech.

But note the need for an immense memory. All other things being equal the greater the memory the better the voice digitization sounds, the speedier the response time.



How does it work?

The Sound Master is a small plug in board which resides normally in Slot 4 on your Apple IIe and provides a fairly sophisticated sound generating integrated circuit which will, in the words of the song, "make Caruso sound like Hutch" and generally produce a rich variety of music and human like speech.

It contains a small power amplifier which can drive the Apple's own internal speaker directly but will give much better results if it is used with a loudspeaker of greater power and refinement. (Worth noting you can get the full glory of stereophonic sound by using two Sound Masters plugged into different sockets. This also increases the number of tones and sounds that the computer can produce leading to a far rounder, richer, warmer, result.)

Working with the Sound Master board or boards is the Voice Master. This "black box" - actually it is silver but the phrase is apt - is plugged into the paddle port and has its own microphone and earphones.

What the Voice Master does, in simple terms, is to record speech and other sounds digitally and then play them back through the Sound Master board on the computer and then through the loudspeaker. The Voice Master uses 64K of memory in standard configuration.

Plugging in the bits and pieces is child's play and when you boot the master disk - which works on Dos 3.3 -

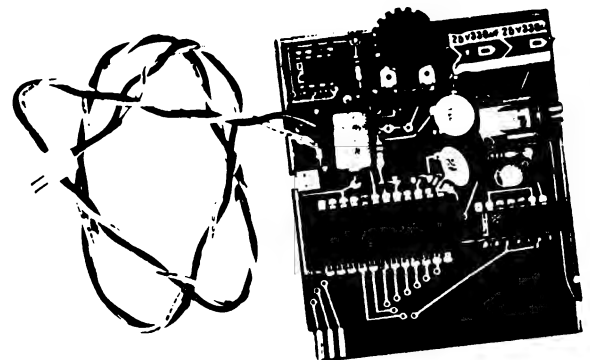
the loader program automatically detects whether you have a 64K or a 128K machine and loads the appropriate software into place. You need to calibrate your Voice Master to precisely fit your computer and a small tool is provided with which you can turn a set screw so that when you speak into the microphone the red light on the Voice Master lights spasmodically.

If this system were to cost an arm and a leg there is no doubt it would have meters instead of this solitary light, and anyone who is reasonably expert at electronics could no doubt wire up a meter into the circuitry for more precise adjustment. But as it stands it works, and works remarkably well.

At this point you can move on to some experimentation.

Those of us who have got used to ProDos or, even worse MsDos on IBM clones, will have forgotten that Dos 3.3 only works with capital letters. Good idea to press the shift lock key for the duration of the session or you, too, will wonder why the program is not responding. It is not responding because it is case sensitive and only recognises capitals, that's why.

(This, again, takes you back to the pioneering days of Apple. Is there anyone reading this who remembers the Heath Robinson contraptions we used to put on early Apples to give them true upper and lower case? I bought mine in one of the first Apple stores in New York and it cost me an arm and a leg and



never worked terribly well. How matters have progressed.)

When the disk is booted you are faced with a series of options listed on a menu beneath which there are several sub menus. When the main menu appears you can choose, if you like, music, when you will have lost me for that is not my scene. The first entry on the menu is "A - DEMO". Selecting this gives you a second menu which teaches you how to record and playback voice samples.

If you know about noise you might at this time select the BAR program which is a sort of spectrum analyzer operating with high frequencies shown on the left. There is an amplitude bar on the right and if the machine has been calibrated properly nothing will show when no sounds are being put forth into the microphone. For the purposes of this exercise heavy breathing counts as a sound.

Before you start experimenting it is worth noting that Control A will suspend the program while you rush off to watch another thrilling episode of "Prisoner".

From then on it is experimentation all the way. The manual not only encourages you to experiment. It forces you

"The Voice Master and Sound Master kit allow us to become part of this great experiment at very little cost"

to. In fairly short order you will learn how to set up a Speaking Clock, working in your own voice. True it is completely inaccurate, but we are experimenting here.

You can easily create a working speaking calculator or play blackjack with the game instructions being spoken and the value of the cards being told to you by the dealer.

That is the speaking part. Experiment with it, play with it, enjoy, enjoy.

Now we come to the listening bit. With this set-up you train the Apple to listen to your voice and recognise it.

- You speak into the microphone and a sample is taken of your voice. Best to give the computer at least two samples to work from for each word. These samples are then transformed into templates and, in theory at least, the computer will recognize your voice next time you speak the same words.

There is a current limit on the program of 32 templates. That means you can train the computer to recognise 32 words. This is not many, not many at all, although most commercial systems only allow you to soar to the giddy number of 64.

And you will find it takes the Apple over half a second to search through these templates to get the appropriate one nearest your voice and the sound it is making. The more words that are loaded into memory, the longer the search takes, although there are some cunning branching algorithms being written which speed up the process more than somewhat.

You can see here one of the current problems with voice recognition. That is the slowness of the computer in searching

through its memory to find a matching template. Consider half a second for 32 words. Then consider how long it will take with a reasonable vocabulary of 5,000 words and how long it would take with a full vocabulary of 20,000 odd words. As in forever.

Which is why we are all in a state of experimentation. Trying to find ways to get the computer to understand and act on commands given verbally. Getting the computer to reproduce digitalized recreations of speech which sound, at the very least, humanoid. We are some way from getting there yet. But the Voice Master and Sound Master kit allows us to become part of this great experiment at very little cost.

At the moment I am linking voice actuation into an artificial intelligence program. If and when I succeed I will be one step closer to escaping from the thrall of the keyboard.

I commend this system highly.



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Apple Assembler

PART II

In this article we'll continue our discussion on assembly language programming on the Apple II. Last month we covered the LDA, STA, and TAX instructions and introduced some of the 6502's many "addressing modes". Let's take a look at these instructions in a bit more detail.

Figure 1 shows a chart of the 6502 instruction set and the various addressing modes associated with each one. This is actually only about half of the opcodes, the rest fall into the category of **Inherent** or **Relative** addressing and will be dealt with in future issues. The chart will prove to be a valuable reference as an understanding of assembly language is developed.

The numbers (and letters) in the table are the hexadecimal machine codes which are translated by the CPU when the

Fig 1 :
Instructions
& addressing
modes

	ZERO PAGE	ZP, X	ABSOLUTE	ABS, X	ABS, Y	# (IMMEDIATE)	A (ACCUMULATOR)	ZP, Y	(ZP, X)	(ZP), Y	
LDA	A5	B5	AD	BD	B9	A9		A1			Load accumulator
LDX	A6		AE		BE	A2		B6			Load x reg
LDY	A4	B4	AC	BC		A0					Load y reg
STA	85	95	8D	9D	99			81			Store accum
STX	86		8E					96			Store x reg
STY	84	94	8C								Store y reg
AND	25	35	2D	3D	39	29		21	31		AND to accumulator
ORA	05	15	0D	1D	19	09		01	11		OR to accumulator
EOR	45	55	4D	5D	59	49		41	51		EXOR to accumulator
ADC	65	75	6D	7D	79	69		61	71		Add with carry
SBC	E5	F5	ED	FD	F9	E9		E1	F1		Sub with carry
DEC	C6	D6	CE	DE							Decrement mem
INC	E6	F6	EE	FE							Increment mem
ASL	06	16	0E	1E			0A				Shift left
LSR	46	56	4E	5E			4A				Shift right
ROL	26	36	2E	3E			2A				Rotate left
ROR	66	76	6E	7E			6A				Rotate right
BIT	24		2C								Bit test A,M
CMP	C5	D5	CD	DD	D9	C9		C1	D1		Compare A,M
CPX	E4		EC			E0					Compare X,M
CPY	C4		CC			C0					Compare Y,M

the program is assembled. For example, let's take a look at one of the instructions I introduced last month:

LDA \$A36B.

When this instruction is assembled - translated into machine code - by the computer, the hexadecimal number **AD 6B A3** is the value that is actually stored in memory. You can find this value by locating the opcode "LDA" (top left) and following along to the column associated with the addressing mode we are using, in this case, **Absolute Addressing**. That accounts for the "AD" but what about the remaining figures?

The other numbers form the **Operand** - the value to be operated on. These values are not changed from the way they are entered initially except they are simply reversed in order when assembled. The "page" location followed by the address within that page of memory is the way the operand is entered by the user, but the CPU prefers to store the numbers the other way around. Don't ask me why that is so, but the 6502 is not the only processor that does this so no doubt there is wisdom in it somewhere.

You may be wondering what these "hex" numbers mean to you, the humble programmer. The truth is they mean precious little at this stage except to provide some insight into what actually happens when the CPU takes and digests your assembler code. Many seasoned programmers believe it is very important to understand this process. I, however, have included them mainly to show the various addressing modes applicable to certain opcodes. As can be seen, not all modes can be used in all situations. Those boxes for which no hex code exists indicate that the use of that particular address mode with that opcode is illogical or impossible. This will become evident as our discussion progresses.

I have mentioned "Absolute

addressing" several times now - let me explain further as it is probably the most used addressing mode.

Have a look at the first six instructions in the chart. Last month I explained that LDA means to Load the Accumulator - a general purpose register internal to the CPU - with whatever the operand (the next field) specifies. STA means the opposite; i.e. Store the data held in the Accumulator at the location specified by the operand. LDX, LDY, STX and STY do virtually the same except they specify the X and Y registers respectively instead of the accumulator.

Now in the case of Absolute addressing the operand contains an address - not data. In our previous example, LDA \$A36B, the CPU has been instructed to do the following operation:

- 1) Go to memory location hex A36B.
- 2) Take a copy of the data at that location.
- 3) Place the data in the accumulator.

The same would apply if we had used the LDX or LDY instruction, except the data would have been placed in the X or Y registers instead of the accumulator.

Remember these instructions are carried out when the program is run, not when the code is assembled. Assembly must take place before the processor can make any sense of the program.

For the STA instruction - for example STA \$A36B - the CPU has been given these commands:

- 1) Take a copy of the data held in the accumulator.
- 2) Go to memory location hex A36B.
- 3) Store the data at this location.

Again the same would have occurred if we had used the STX or STY instructions, the data being taken from either of these registers instead of the accumulator.

It is important to understand that when data is transferred from place to place within a program, the data is

merely copied, not removed from the first location. It is similar to copying data from one floppy disk to another.

There are many other instructions that can use absolute addressing. If you look further down the chart you can see that the next three opcodes perform logical functions on the data at the location specified by the operand. Those of you familiar with the principles of Boolean Algebra will understand what is meant by a logical AND, OR and Exclusive OR. Those of you who think that Boolean Algebra sounds like something you ask for in a chemist when there's nobody looking should gather round for a quick run down on the rudiments of this very important branch of mathematics.

All information in a computer is stored as groups of bits. A bit is an abbreviation of the words **binary digit**, and a binary digit is either a "1" or a "0". Due to the mysterious workings of digital electronics, the only practical representation of information is in this two state logic. It can be considered as a switch being on for a "1" or off for a "0". Indeed this is exactly what happens within the dark halls of almost any integrated circuit; i.e. internally, an I.C. is simply a collection of anything up to several million electronic switches being either on or off. I'll develop this concept in somewhat more detail when we come to dealing with the arithmetic instructions such as ADC and SBC.

Now, thanks to our big blue friends IBM, we call a collection of eight bits a byte (and would you believe four bits is a nibble?). And it is a byte that is particularly relevant to we who are using an eight-bit processor. Boolean logic comes in when we begin to manipulate these "bits" within the computer.

Consider two bits, a "1" and a "0". If you perform a logical AND on these bits you will get the result of a "0". Let's look at a table of results:

0 AND 0 = 0
1 AND 0 = 0
0 AND 1 = 0
1 AND 1 = 1

So it can be seen that the only way to get a "1" is to have both bits to be operated on a "1" (both switches on).

The logical OR function has the following results:

0 OR 0 = 0
0 OR 1 = 1
1 OR 0 = 1
1 OR 1 = 1

The **EXCLUSIVE OR** function is a little more interesting. To achieve a logic "1", both inputs must be different. It works like this:

0 OR 0 = 0
0 OR 1 = 1
1 OR 0 = 1
1 OR 1 = 0

There are several other logical expressions, but these are the most relevant to us at the moment.

Now that we have seen how this works on single bits, let me demonstrate the same principle, but on a whole byte. Hex values for these numbers appear on the right.

10001001 (\$89 AND
00011011 (\$1B)
= 00001001 (\$09)

So there you have the principles of Boolean Algebra. The significance of this is no doubt heavily shrouded in mathematical mist, but let me assure you it is extremely useful once you begin to program in assembler.

The three logical opcodes in the table may now make a bit more sense (if you'll pardon the pun). The AND instruction does the following when using Absolute addressing. Take this example;

AND \$A36B

- 1) Take a copy of the data at location \$A36B.
- 2) Perform a logical AND on the data in the accumulator.

- 3) Store the result in the accumulator.

The other instructions ORA and EOR do the same except they perform a logical OR and EXCLUSIVE OR respectively.

Last month I also mentioned **Immediate addressing**. This is quite different from Absolute addressing in that there is no accessing of memory involved. (Technically this is not quite true, but for the time being it is best to think of it in this way). Whereas in Absolute addressing the address of the data to be operated on was supplied in the operand, in this form of addressing the data itself forms the operand.

Looking at our previous example, let's see how this works using Immediate addressing. We are forced to restrict ourselves to only two hex digits in this case since this works out to be eight bits which is the most the CPU can handle at a time (when using addresses four digits are used since we have sixteen address lines but only eight data lines);

AND \$A3

- 1) Perform a logical AND on the data in the accumulator with the data supplied in the operand.
- 2) Store the result in the accumulator.

The other examples I presented can also be used with Immediate addressing, again operating on the data supplied rather than fetching data from a supplied address.

The DEC and INC instructions, again found on the table of fig 1, cannot be used with Immediate addressing since they are used to DECrement and INCrement memory locations. Taking the example of the INC instruction, it works as follows;

INC \$A36B

- 1) Go to memory location \$A36B
- 2) Increment the data at that location by 1

The DEC instruction is the same except, of course, it subtracts rather than adds 1 to the data at the specified location.

The remaining opcodes on the table are somewhat more complex in operation than those presented here. I will detail their operation in the coming months.

In the mean time, there remains a very important step which, for simplicity's sake, I have left out of the details of each opcode. Last month I outlined the various "flags" within the **Status Register** - also known as the "P" (for processor) register. These flags are updated after execution of every instruction. They provide the programmer with the very powerful (and necessary) capability of decision making. Readers familiar with Applesoft BASIC may recall the "IF . . . THEN" commands or "IF . . . GOTO". These are instructions which make a decision based on a given result which has occurred in the program. Some forms of BASIC include "ELSE" as a further decision making device.

In assembler we are limited to making a decision based on the condition of the flags in the status register. For example, if the result of one of our earlier examples was negative, the "N" flag would have been set (made a "1"). If, on the other hand, the result was zero, the "Z" flag would have been set.

It is this decision making ability that provides the power to intelligently control the flow of programs. Its usefulness will quickly become evident as we progress.

We have seen, then, the differences between Absolute and Indexed addressing and how some of the instructions behave when used in either of these modes. In the next few issues I will present the remainder of the instruction set and the other addressing modes available on the 6502. We will also look at applying the Status register and the development of structured assembly language programs.



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Mac+II

use Apple II software on your Mac

by Will Dorn

SINCE WE RAN the preview of *Mac+II* in last month's issue, we have had many calls from people wanting to transfer Apple II programs to their Macintosh.

We would like to point out a few things before getting into the meaty bits of the program.

Apple II Emulator

First of all *Mac+II* is an emulator for the Macintosh which effectively turns it into an Apple II+ or IIe. This means that once you have booted the emulation system on your Macintosh, you cannot use Macintosh programs without a cold boot.

If you have access to an Apple II and a Macintosh it means you can transfer all of your **unprotected** software to 3 1/2" disks and run them on the Mac, so that they look exactly as they do on an Apple II.

There are a number of things to be considered with your configuration.

You have to transfer the ROMs from an Apple II across to the *Mac+II* Macintosh disk. To do this you must have an Apple II+ or a IIe.

It is mentioned in the manual that you can't transfer the ROMs from a IIc; I tried and failed dismally. This, however, does not mean you can't use a IIc to transfer data to the Mac, but you do have to get access to a II+ or ideally a IIe and transfer their ROMs. The IIe is preferable because the more advanced the ROMs are that you transfer, the smarter your Mac / II will be.

The process is simple

To connect the computers you require an Apple II+ or IIe with an Apple Super Serial card, an Imagewriter cable and a Macintosh. Follow the instructions in

the manual about the hook-up and boot the software.

On the Apple II you have four options.

1. Applesoft
2. Load Integer into Language card
3. Mac Com
4. TransROM

Choose option, 4 and a special communications program opens. You simply set the options and are ready to go.

At the Macintosh there are a couple of differences.

The first time you run the program you are asked if you want to transfer the ROMs. You can't go further until you do.

The process is simple: answer OK to the prompt and you are presented with a Mac style version of TransROM. Once you have verified that your settings are the same at both machines, click OK at the Mac and with the cursor positioned on START at the Apple II hit RETURN.

Disks whirl at both ends and you are in business.

The first time you boot the Mac+II disk after this procedure you are presented with a sign on screen and after a few moments the Mac will eject your disk, the screen goes black, you almost have a heart attack, then the Mac beeps and at

the top of the screen are the familiar words telling you what sort of Apple II you have and the] cursor.

You now have two Apple II's

Place the Mac Dos / Mac Com disk in the Mac and type PR#6, with caps lock down for the II+, and later rather than sooner you will see the MacCom sign on screen with three options.

Your Mac+II is slower than the original Apple II you have copied the ROMs from. For example, to boot both versions of Mac Com, my Macintosh 512 took nearly 16 seconds longer than the Apple IIc. The software you transfer will also run noticeably slower too.

Transferring Data

After you have the transfer program up on both machines, you must make sure that one is sender (the real Apple II) and one the receiver (the Mac).

I'm sure you noticed I said my IIc was faster. Since you can't transfer the IIc ROMs you must acquire some from a II+ or IIe. Once you have done this you can use any Apple II to transfer files to the Mac. This has tremendous potential. The IIc cable must be made especially, and the manual has information to help you if you can wield a soldering iron without soldering your own fingers to the cables.

An important thing to remember about transfers is that the program can only transfer **non-protected** software, so all your own programs, files etc. can be sent across in DOS 3.3, PRO DOS or whole disks (recommended for major PRO DOS programs).

When using the whole disk transfer mode it takes nearly eleven minutes to send the data from the II to the Mac. This is because the program copies a sector at



a time. The other methods are faster, because you can select which files are to be sent.

Apparently the use of a UniDisk drive at the Apple II end can speed up PRO DOS transfers considerably, this was not tested in this review.

What is a Mac / II like?

The Mac looks a bit strange with white text on a black screen, but the font used is pleasant on the eyes and you quickly get used to it. The strange part for me was going back in time to my Apple II days and remembering to CATALOG etc.

Everything seems to work, even

though I didn't do any programming. It's just like the real thing, but the differences in keyboard layout mean that you will have to consult the keyboard reference list for some commands.

I have missed many of the delights of the Apple II since money considerations said it was one or the other and the Mac won. Now I can have the best of both worlds, albeit quite a bit slower, on one machine.

The manual leaves a lot to be desired in its layout, even though all the information you need to get going is included.

Commands to control a printer, external drives, and 16k card as well as a

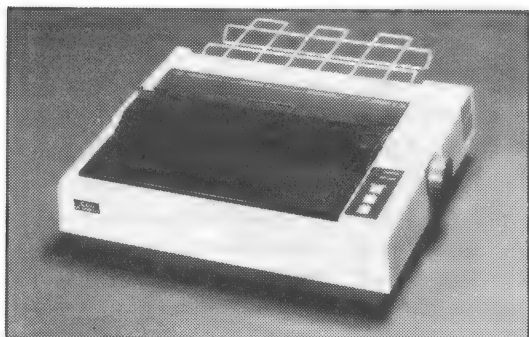
modem which partially emulates a Super Serial Card are available. You are limited to a maximum of 128k of RAM and an 80 column display if you have transferred IIe ROMs.

At the time of writing a retail price has not been decided on but with a U.S. retail of \$149.95, which would probably double into Australian dollars, it could be a bit expensive for many pockets, but at the same time you are virtually buying a second computer.

If you are one of those people who finds the arcade games go too fast for you, or you want a Mac without losing the wonders of the Apple II, this could well be the answer to your dreams.

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Desktop Publishing in Science and Technology

by Milan Vender

IN THE RECENT FLOOD of articles on desktop typesetting and publishing with Macintosh, LaserWriter and suitable software packages, none seemed to go beyond the frame of the general applicability. We could find comprehensive comparisons of wordprocessing, graphical and typesetting software but very little was said about the practical experience with these tools in some specialized communication fields.

We hope that this article could partly fill the gap in one specialized area of scientific and technical publications with plenty of mathematical formulae, graphs, diagrams and tables.

When the author of a report, paper or thesis finishes his or her manuscript, work on the publication is far from being over.

The typist asks frequently about the meaning of unusual or illegible words and about the layout of tables and mathematical and chemical formulae. Finally, the draft is presented to the author for the first round of corrections.

Depending on the experience of the typist and on the available wordprocessing facilities the draft may pendulate between the author and typist up to ten times before the final version reaches the desirable standard.

It is our experience that the most difficult task is to achieve a satisfactory layout of the formulae and tables. The usual sticky points are the main horizontal axis of the fractions, subscripts,

'Even the best piece of scientific or industrial research can benefit from a good standard of formal appearance'

superscripts, Greek letters and special mathematical symbols. It is quite common that the body of the publication is produced by a wordprocessor lacking the Greek alphabet. In such a case the formulae are inserted by hand or using another typewriter, to the detriment of the overall appearance of the paper.

Another time consuming component of the report are figures and graphs. Very often these are the sole responsibility of the author, who may excel in one or other scientific discipline but is not a skilled draftsman and does not have the time to bring up his illustration to the standard of the graphical work of art. We can see enough of poorly designed and badly annotated figures in many scientific and technical journals.

To make publishing even more difficult, there are bosses, editors and reviewers. They find in your creation a thousand things which have to be changed, rephrased and modified. The

whole cycle of drafting, corrections and rewriting goes on once again.

Looking at the problem from another point of view, there are good reasons for a good presentation of reports. Even the best piece of scientific or industrial research can benefit from a good standard of formal appearance.

Well produced articles attract attention, are more easily readable and facilitate the acceptance of the message. On the other hand an untidy paper seems to generate resistance - it is as though you have to shake a dirty hand.

For an institution the formal appearance of the publication is a sort of a show window - you would hesitate to enter a shop with a repulsive front. Last but not least it is quite common,

'One point is not often realized - that you do not need to be a good typist in order to use wordprocessing'

especially at conferences, that the proceedings are released as a collection of presented papers in the form submitted by the author. Usually there are some strict rules to be kept but in spite of this the variety of fonts, type sizes and appearance of the illustrations is quite amazing.

The arrival of desktop publishing brought a radical improvement of the situation.

Macintosh + LaserWriter + software packages which are already available enable us to produce reports and publications in the form which can satisfy even the most demanding reader.

In many cases the author will discover that it takes substantially less time not only to produce the report but also to achieve a standard of appearance unobtainable before. Those who have the necessary equipment may find out that it takes less time to start with the publication directly in the drafting stage. It is certainly much easier to make all the rewriting and changes of the draft using wordprocessor than by hand.

One point is not often realized - that you do not need to be a good typist in order to use wordprocessing. While you cannot compete with a professional in words per minute, the creative part of the writing is the most important and time consuming component of the process. The time savings here can more than compensate for your lack of typing skills.

Selfservice wordprocessing will bring also other time savings. These are given by the knowledge of the subject and terminology, and of the correct layout of formulae, illustrations

and tables for getting the message through. All these factors represent a significant reduction of time spent with reporting.

It was the author's experience over last years spent in research of one large Australian company that this computerized drafting of reports significantly increased his proportion of time spent in active research work.

With the current prices of hardware and software you are looking at something between \$12000 and \$15000 for the basic setup. Not everybody can substantiate this capital expenditure and enjoy the full benefits of the desktop scientific and technical publishing. There is however no doubt that this is the way to the future.

There exists already at least one company in Sydney (JMV Computer Services Pty. Ltd, phone 546 3882) which offers these highly specialized services provided by professionals. With growing awareness the availability of similar services will grow too.

Practical examples

After the lengthy but necessary introduction we may demonstrate on practical examples what computerized publishing can do for the authors of scientific and technical texts.

We would like to stress that we are preoccupied with publications in which the formulae, tables and illustrations are at least as important as the text itself. This seems to exclude some scientific disciplines which can produce their texts without the assistance of special software.

We start with mathematics. Look at the first example in Figure 1. The font used here resembles normal typewriter

$$W = - \int_i^e v dP + \frac{(V_i^2 - V_e^2)}{2} + g(Z_i - Z_e)$$

Figure 1. Example of a simple mathematical formula

(Courier) but there is a large symbol of integration, some letters are in italic and the fraction is placed in the main axis of the whole formula. There are both subscripts and superscripts referring to the same variables.

Every typist will agree that while not impossible, it would be quite time consuming to produce such a simple formula using a normal typewriter or wordprocessor.

In fact the formula was drawn using the program *MacPaint*. First the normal text in the main axis was typed with all letters in italic. After this the style was changed to plain text and the signs of equality, pluses and minuses, the brackets and the fraction line were inserted. The top and bottom part of the fraction and all the subscripts and exponents were typed separately elsewhere and dragged to their final position. The whole formula was copied to the clipboard and pasted into the *MacWrite* document.

The next two examples demonstrate the use of special symbols and Greek letters as they are available in the Mac software. Again *MacPaint* was used to place correctly the

$$\Delta G^\circ = \sum_{i=1}^K \nu_i \bar{g}_i^\circ$$

$$\frac{\partial t}{\partial \theta} = \frac{\alpha}{r^2} \frac{\partial}{\partial r} \left(r^2 \frac{\partial t}{\partial \theta} \right)$$

Figure 2. Formulae with special symbols and Greek letters

individual symbols. The top formula used the font Helvetica plain and the bottom one Times and Symbol italic.

Finally, the last very complex formula (Figure 3) indicates that even such monsters could be tamed by the computer in a reasonably short time and become quite goodlooking creatures.

$$\frac{dV_\lambda}{dt} = \frac{(a_\omega t + \omega_0)^2 \rho_\lambda \left(\frac{v_\epsilon + 1}{v + 1} V_{\text{cycle}} - V_\lambda \right)}{\mu \epsilon \left[R_c \ln \frac{r_0}{\sqrt{r_0^2 + \frac{V_\lambda}{\pi H \epsilon}} - \frac{v_\epsilon + 1}{v + 1} \frac{V_{\text{cycle}}}{\pi H \epsilon}} + \frac{R_f}{r_0} \right]}$$

Figure 3. Example of a complex mathematical formula produced by MacPaint

The set of symbols provided in the symbol font and in alternate option fonts is satisfactory even for very demanding mathematical typesetting. In order to distinguish between letter symbols and normal text we can use underlining or *italic* style. Vectors are represented best with **bold** style letters. Arrows above the symbols are less suitable because even today's sophisticated software does not provide this option.

Our recipe for chemical formulae is also *MacPaint* package. Of course the simple formulae can be typed directly because the only necessary feature is the capability of writing subscripts which is provided by all professional programs. Figure 4 shows an example of a reaction scheme produced by the

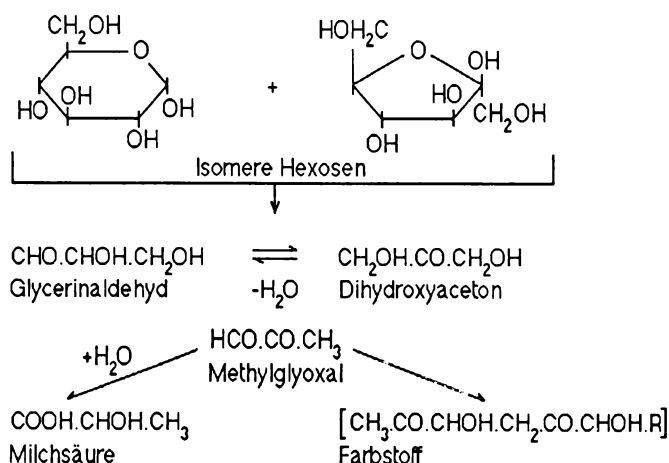


Figure 4. Example of a reaction scheme made by *MacPaint*

MacPaint program. Naturally, if you have *MacDraw* or *MacDraft* you can use these too. Some elements of the complex formulae of organic compounds are used so frequently (e.g. benzene ring) that it is worthwhile to keep them in stock in the scrapbook, copy them to the clipboard and paste them in the formula when needed.

Normal wordprocessing is sufficient for the common layout of tables if you do not use vertical dividing lines. However sometimes you may have problems with the size of the tables. If the selection of a smaller font size is not satisfactory because of poor legibility, the best solution is to use the program *PageMaker* and print the table using the wide orientation of the paper. Alternatively you could use *MacDraft*, type the table in the normal way as a single entity and then rotate the whole table by 90°.

We tried to prepare tables by the combination of the wordprocessing for text and graphical packages for frames and dividing lines. *MacPaint* is not a good solution in this case for two reasons. Firstly, the size of the selection rectangle is limited to the size of the

window. This may be good enough for the width of table but is not satisfactory for tables with the length exceeding the height of the window. When you copy and paste the table in the final document you have to do it in at least two batches and it is quite tedious to get the proper alignment of the two parts.

MacDraw and *MacDraft* have the provision for selection of larger blocks and are therefore better suited for the task. Unfortunately, when you copy the table file to clipboard and then paste it into the graphics you will lose the tab spaces.

The *PageMaker* package will allow you to place the text part of the table into your document in the same form as prepared by wordprocessing. The frame and the vertical and horizontal lines can be then drawn by the program without problems.

You may however find that a reverse copying of the table from the *PageMaker* file into the wordprocessing is full of problems linked with the way how the clipboard works. This is of course of minor significance, because who would use the plain wordprocessing for the final setup of the document when he has the *PageMaker* available.

With *MacDraft* the most efficient way of making tables is to draw the frame first. With the help of the rulers it is a relatively easy task to design the frame so that the width of the columns and the height of the rows is as uniform as possible. The bits and pieces of the text can be typed elsewhere, duplicated for repetitions and dragged to their location in the table. Rotation of the text can provide the headings of columns which would need to be wider otherwise. Numerical data can be typed directly in the windows without much attention paid to their exact position. After the crude table is finished the vertical and horizontal alignment capability of the program will take care of the rest.

Figure 5 demonstrates an example of a slightly unusual form of a table (half of the matrix of the coefficients of correlation with significant value underlined) which was prepared in the described way. The time needed to prepare the table was about five minutes and compares well with the time spent by a typist using a normal typewriter and drawing the frame by hand.

	Yield %	Temperatu °C	Conc. A kmol m ⁻³	Conc. B kmol m ⁻³	pH
Yield %	<u>0.694</u>	<u>-0.975</u>	<u>0.882</u>	0.950	1
Temperature °C	<u>0.874</u>	0.076	0.032	1	
Conc. A kmol m ⁻³	0.108	<u>-0.852</u>	1		
Conc. B kmol m ⁻³	0.056	1			
pH	1				

Figure 5. Example of a table produced by *MacDraft*

MacDraft is also an excellent package for drawing flowsheets, organizational charts and similar type of illustrations. The duplication of repeated elements (such as are the reactors and valves in the following example) represents a significant time saving and contributes to the clean appearance of the drawing.

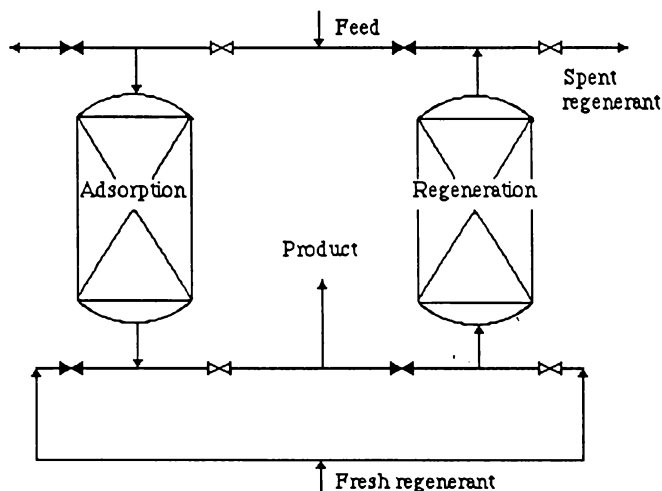


Figure 6. *A simple flowsheet produced by MacDraft.*

Drawing of diagrams picturing relationships between dependent and independent variables can be done efficiently in several ways. If we know several points of the curves we can use the *MacDraft* program in the freehand drawing mode. It does not matter that our curve is full of dents as long as it connects all the fixed points. The smoothing option in the reshape section of the editor will take care of all imperfections caused by shaky hands. This is demonstrated in **Figure 7** in which the enthalpy - composition curves were drawn to connect the points marked in the diagram.

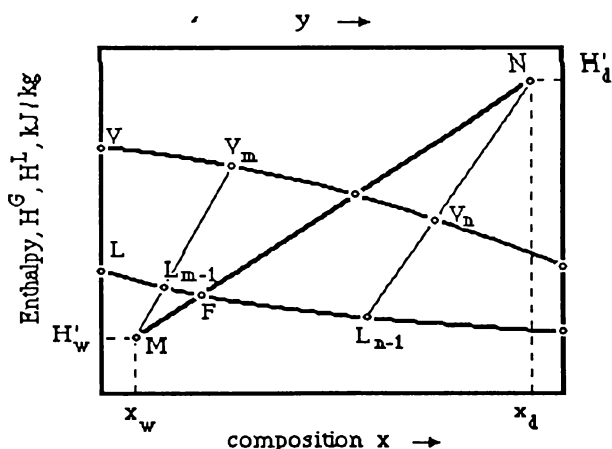


Figure 7. *Diagram drawn using MacDraft program*

On the other hand if we have to plot a curve representing a known mathematical function it is faster to write a special program. Such a program may be prepared in general outline ahead and in any particular case the only thing needed is to specify the function, length of the axes, range of the independent and dependent variables and coordinates of the experimental points if any. The drawing of the picture is thus a question of few minutes.

The following program written in Microsoft Basic may serve as an example in spite of its extreme simplicity:

```
REM *** Program function plot ***
```

```
REM ***Framing of the picture***
```

```
Size = 2: Vertical=156: Horizontal=50: XLength=200:
YLength=200
```

```
REM ***Drawing to the screen and clipboard***
```

CALL SHOWPEN: PICTURE ON: CALL

PENSIZE(Size,Size)

CALL MOVETO(Vertical,Horizontal): **DIM** rectangle%(4)

```
rectangle%(0)=Horizontal: rectangle%(1)=Vertical
```

```
rectangle%(2)=Horizontal+YLength:
```

```
rectangle%(3)=Vertical+XLength
```

```
CALL FRAMERECT(VARPTR(rectangle%(0)))
```

```
REM ***Coordinates***
```

Size = 1: CALL PENSIZE(Size.Size): Division = 5

Interval=INT(XLength/Division): TheLength=Interval

```

WHILE (TheLength<XLength)

```

```
CALL MOVETO(Vertical+TheLength,Horizontal+YLength-2)
```

CALL LINETO(Vertical+TheLength,Horizontal+YLength-7)

TheLength=TheLength+Interval: **WEND**: Division = 2.5

Interval=INT(YLength/Division): TheLength=YLength-Interval

```
WHILE (TheLength>0): CALL
```

MOVETO(Vertical,Horizontal+TheLength)

CALL LINETO(Vertical+5,Horizontal+TheLength)

```
TheLength=TheLength-Interval: WEND
```

```
REM ***Plotting the function***
```

```
X=0: XRange=10: YRange=2.5: GOSUB FUNCTION
```

```
CALL MOVETO(PointVert,PointHoriz): FOR x=.05 TO 10
```

STEP .05

GOSUB FUNCTION: CALL LINETO(PointVert.PointHoriz):

NEXT

```
REM ***Experimental points***
```

```
Radius=2: WHILE (X>-1)
```

```
READ X,Y: IF X>-1 THEN GOSUB COORDINATES ELSE
```

GOTO FINISH

```
CIRCLE(PointVert,PointHoriz),Radius: WEND
```

FINISH:

PICTURE OFF: OPEN"CLIP:PICTURE" FOR OUTPUT

AS #1

```
PRINT #1.PICTURES$: CLOSE#1
```

END

FUNCTION:

```
Y=2.35*EXP(-.8*X)+.01*X^2.31: GOSUB COORDINATES
RETURN
```

COORDINATES:

```
PointVert=Vertical+XLength*X/XRange
PointHoriz=Horizontal+YLength*(1-Y/YRange)
RETURN
```

```
DATA 0.5,1.65,1,1.01,1.5,0.7,2,.55,2.5,.4,3,.4,3.5,.3,4,.36,
4.5,.4,5,.45
DATA 5.5,0.5,6,0.7,6.5,.73,7,.9,7.5,1,8,1.3,8.5,1.4,9,1.5,9.5,
1.9
DATA -1,0
```

In the first part we specified the coordinates of the top left corner of the graph, the length of the axes and the thickness of the line for drawing the frame. With these data the frame is drawn by just one command. The scales of the x and y axes are drawn next. The pen is moved to the starting position and the curve is drawn using the calculation of coordinates for reasonably short intervals.

Finally, the program reads and plots the coordinates of experimental points given in the DATA lines. Program is written so that the drawing is visualized on the screen and written to the clipboard at the same time. From the clipboard the picture is pasted in a new *MacPaint* file.

It is possible to write the text at the same time as the drawing but it is more simple and shorter to add the legend in the *MacPaint* stage. The final result is demonstrated in Figure 8.

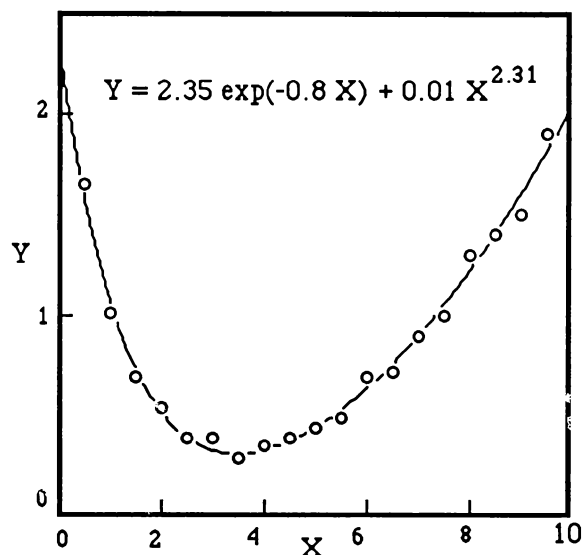


Figure 8. Plot of a function created by a special program

Conclusions:

While the field of the scientific and technical desktop typesetting is far from being exhaustively covered, we believe that the present article indicates at least the most significant and interesting aspects of these fascinating applications of the computer technology.

With the advances of technology the era of the simple typewriters and wordprocessors is passing. The new developments enable us to present the results of scientific and industrial research efforts in a form which is by an order of magnitude better than the standards of yesterday. With such a development there is little doubt that soon the editors of scientific and technical journals will demand from the authors that their papers be presented not only as a well set hard copy but also as a file on floppy disk.

Author wishes to thank JMV Computer Services Pty. Ltd. for kind permission to reproduce the examples of formulae and diagrams.

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Why you need a computer aided music system

by Ric Richardson

People are always telling you that you need to spend money. You want to go faster, you've got to spend money. You want to see something new, you've got to spend money. It seems whenever you want to have some fun, you are reaching into your back pocket. Of main concern is finding a way to have more fun without the pain of big bills.

Music on its most basic level is quite an inexpensive pastime. An acoustic guitar can get you singing your favourite songs for under \$100. (That's if you have enough ability to get by without lessons for twelve dollars a hit.) If you are a proficiendo of the piano, a cheap keyboard can be had for a couple of hundred dollars, a la Casio, and you have entered the world of music for the masses.

This is all very well. But if your aspirations require sounds that are good enough to put on vinyl, you have got to expect to spend many multiples of this. As you continue in your endeavours, you will find music by yourself a bit boring. After the acquisition of bodybuilding guitar amps or keyboards, depending on



which camp you belong to, the next step is to find a band!

After a few years of dragging gear from friend's place to friend's place, you have found the idea of making music in the comfort of your home studio (sunroom) that bit more palatable. You have, at much pain, worked out what each instrument in a band does, and you set about the job of getting all those ideas captured on tape. If you are like me, a plan is set to save for all the required instruments. A drum kit, bass guitar, keyboard and singing lessons, not to mention the trusty Strat (standard guitar for rock 'n roll, the Fender Stratocaster). Oh, and not forgetting the need for special multi track recording gear that enables you to layer each instrument on top of each other, bringing your musings to life.

Total cost? If everyone saw this figure before they set out to write and play music, I think there would be a lot fewer musicians. A decent recordable guitar, \$300. A half decent bass guitar, \$300. The most basic synthesizer, \$700. And then there are the drums, and they are a real headache.

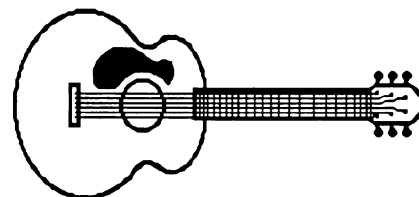
By now you will have no doubt been informed of the most convenient, best sounding way of getting your rhythm down. Music technology's wonderful gift, the drum machine. Cost, anywhere between \$600 and \$2,500. To get this on tape, another \$1,000 gets you the basics in multi track recording gear.

Add this up and you find it quite staggering that so many out there are so addicted to music. But many of you,

me, are slaves to our love, desperately making do, finding even this system of music-making to be a cumbersome yet necessary evil.

Like some distant relative of a used car salesman, of late, I have been desperately trying to con as many as possible with the idea of getting a computer to take the hassles out of our dearly loved endeavour. Yes, computers armed with this mystic acronym called MIDI are claimed to be the best thing yet as a cure-all for the music maker's dilemma.

The theory is that computers, branded as the biggest work saver of all time, can be hooked up to all kinds of musical instruments and manipulated with greater control and proficiency than has ever been seen before. Many of you no doubt, only starting out in your interest in music, have found that hardware takes a back seat in a quest to end result. The fifty million dollar question: How can a



computer based system help alleviate some of these problems?

Foremost, as demonstrated in our introduction, any way of minimising cost would be a high priority. Also, to what extent is artistic control affected by the transition to a computer based system? How much will I have to learn to use the equipment effectively? How involved do you need to be to be able to use the gear?

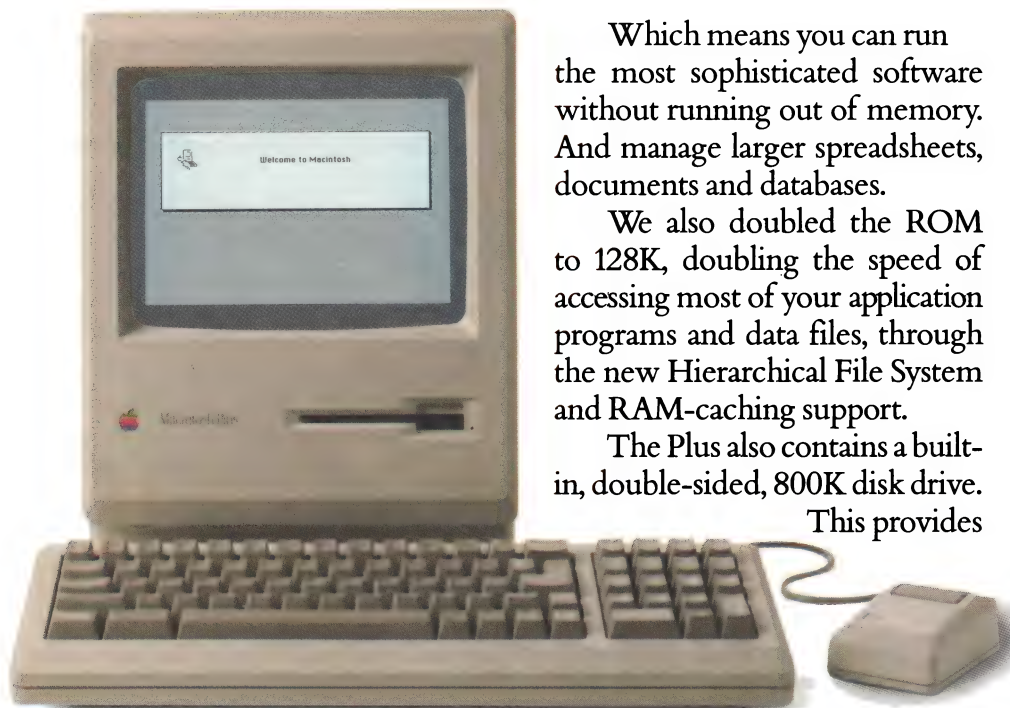
Firstly, let's look at the financial angle of our plan. If a computer system were as easy to use as the traditional setup, by comparison how will I save money? There are two basic principles that give our system advantage over the traditional.

One, that by being based around electronic instruments such as

continued on page 26

Australian Apple Review 23

New Macintosh Plus. We've added



This year Apple introduces a new Macintosh.

Macintosh Plus.

As the name suggests, it's evolutionary, rather than revolutionary

(It's not our policy to bring out totally new computers for the sake of it. Instead we strive to perfect existing ones.)

Macintosh Plus is as simple to learn and use as before.

But there are some big differences, encouraged, we don't mind admitting, by current Macintosh owners.

Some of you asked for more power, others speed. Some needed greater storage capacity, others expandability.

Some heavy number-crunchers wanted a numeric keypad and conventional cursor keys built into the keyboard rather than remote.

Done. Done. And done.

The pluses of this new Macintosh include a full megabyte of RAM (expandable to four megabytes).

Which means you can run the most sophisticated software without running out of memory. And manage larger spreadsheets, documents and databases.

We also doubled the ROM to 128K, doubling the speed of accessing most of your application programs and data files, through the new Hierarchical File System and RAM-caching support.

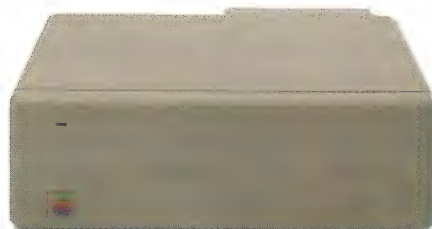
The Plus also contains a built-in, double-sided, 800K disk drive.

This provides

twice the capacity of the previous Macintosh and the equivalent of 400 typed pages, or a bulging file drawer.



If that's still not enough, you can always plug in another 800K external drive.



Or you can really go all out and add our new Hard Disk 20. (Its 20 megabytes are about 10,000 pages worth.)

Just plug in a Macintosh Hard Disk 20 and you can keep all your software, files, worksheets and

documents within a moment's notice of your screen.

Add the Apple program Switcher, and you can actually work with several applications at once, moving information from one into another with the greatest of ease.

So you can transfer notes from an outline to a report – or numbers from a data file to a spreadsheet – as fast as you can click your mouse.

AppleCare.

All Apple products come with an automatic 3-month warranty covering all parts and labour.

But this year, Apple introduced a sort of "Warranty Plus" through the AppleCare service programme.

If you fill out and mail to us the registration form enclosed with your equipment, you will receive nine extra months' cover on top of the normal three.

Macintosh Plus also features a new SCSI connection port (dubbed "Scuzzy" in typical fashion by the development team).

SCSI stands for Small Computer Systems Interface and it's an industry standard.

We've virtually opened up the architecture. But what we've really done, of course, is open up a whole new world of possibilities.

The Scuzzy port let's you daisy-chain up to seven high-performance (and often low-priced) peripherals like hard disks, file servers and tape backups from all sorts of third parties.

Given all this power, it made sense to team it with equally impressive printers.

The new LaserWriter Plus is just such, producing documents with text and graphics of publishing quality.

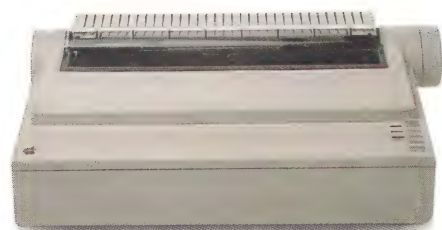
everything except complications.

And it maintains this fidelity on copy paper, letterhead, labels, envelopes or overhead transparencies.



LaserWriter Plus has 35 different typefaces built in, a choice that would embarrass your local printer (and his invoices).

But if you don't need publication-quality printing, you can have near letter-quality by teaming up your Macintosh with the ImageWriter II.



It prints in three different modes: high-quality, standard and draft. And churns it out at speeds of up to 2½ pages per minute.

You can feed in single sheets automatically with the optional SheetFeeder.

And print up to seven colours using appropriate software.

ImageWriter II can also be shared with other Macintosh users via AppleTalk.

But this Macintosh isn't called Plus for nothing. You can just add and add.

Items like an AppleTalk Personal Network.

It's the most flexible, low-cost, easy-to-set-up, easy-to-use network around.

It'll connect up an office full of Macintoshes, LaserWriters, ImageWriters and file and disk servers – 32 devices in all.

Using an electronic mail package, you can send messages to any Macintosh screen on the network.



Or with EtherMac software you can share information with other computers. (Our computer is so friendly it'll even talk to IBMs.)



Add an Apple Modem 1200 to your Macintosh and you can talk to anyone virtually anywhere.

With a communications program like MacTerminal, a standard telephone and an Apple

modem, your Macintosh can plug into electronic information services like Viatel, Minerva and Midas and communicate with mainframes and minicomputers.

If you already own a Macintosh, there's another plus.

You can upgrade your machine to the new one megabyte. Ask your dealer for upgrade details.

You can also upgrade your LaserWriter to become a LaserWriter Plus.

Get hands-on with the new Macintosh Plus.

You should like it.

You helped design it.



The Apple business card.

If you wish to own a Macintosh system, you can take advantage of the Apple Credit Card, available from participating dealers.

You can use it to purchase computers, peripheral equipment and software with no down-payment and less impact on your cash flow.

If you qualify, in most cases you can take your own Macintosh with you and dive straight into work with it the same day.

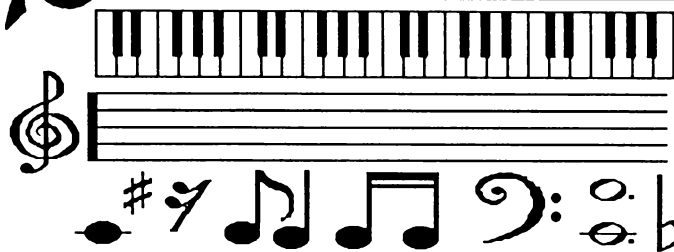
For an authorised Apple dealer near you outside Sydney, you call toll-free (008) 22 1555 or Sydney 908 9088.

AP 219/Palace



Apple

[MUSIC



synthesizers and drum machines, you can take advantage most effectively of all the technological advantages that are pouring out from the development departments of the world's leading music companies, whose aim is to provide better quality and range of sounds at the lowest possible price.

Two, that as the inevitable happens, the industry will tend to support more and more computer technology. Even now, the latest products are becoming very software orientated. Eventually, many of the sound effects and sound generators currently available as hardware will become available as software on a disk for a fraction of the cost.

In real terms, the saving can be seen when you can readily find modules available with the guts literally ripped out of their parent keyboards at less than half the price. These modules can then be controlled by a computer and a mother keyboard, no need for the module to come with its own keyboard. A graphic example comes to mind with the DX7 and its sister in module form the TX7. The DX's price? Just shy of \$3,000. The TX7, capable of exactly the same sounds when controlled using MIDI, comes in at under half that price for around \$1,400. By the way, the DX is somewhat of an industry standard.

Suddenly, the equipment needed to make fantastic sounds has become available to ordinary people. Computer technology is already at the heart of most of the equipment that music companies are using. Most sequencers are 64 or 128 K computers devoted to controlling the sequencers or the playing order of notes. Multiply this 50% saving factor by the number of keyboards that you need to start and setup "your" sound, and you can see what kind of prospects there are for saving using the MIDI system.

Then there is the advantage of having a standard system for all the varying

sounds that you might require to write your music.

If you want to have drum sounds, you've got to learn how to play the drums. If you want synthesizer sounds, you've got to learn how to manipulate all the controls to get the sound you want. Somehow in amongst this you've got to get your voice happening and write songs.

Many of these problems are fixed by using the MIDI system in that, if you have one keyboard as controller of all the different modules that have sounds, such as drums, bass sounds, synthesizer sounds, special effects sounds etc, then you only have to learn the technique of playing one medium, that is, a keyboard.

Eventually, there will be cheaper variations on what you can use as a controller. Even now there are fantastic gizmos such as a MIDI controller that is a guitar. There is also an excellent device spoken of in last month's MUSE section, called "The Voice Tracker", which actually converts your voice input into a MIDI signal to control other MIDI instruments. By far the easiest way for you to transfer your ideas into sounds produced to emulate whatever instrument you like. This more than compensates for having to learn how to make the computer control the instruments.

Many professional musos have found it a struggle to learn to develop technique for all the different instruments they need to be able to produce their sounds, and they can't see how having to learn how to work with a computer is going to help them in the creative process. But you can see that standardising all the varying sounds required by using a single controller keyboard will simplify matters and actually increase the speed of the creative process.

This is a very hard and fast attitude that is not held by a lot of people, in that they appreciate the subtleness of

technique learnt by somebody who plays the acoustic instrument. The acoustic guitar, the electric bass. But consider the advantages to someone who is learning from scratch.

Also, as interest develops in this area, we will find a lot more software becoming available; it will become increasingly more user friendly and also more efficient. With increasing interest data disks will become available providing tutorials on learning music and how to use this new technology and equipment, making it a lot easier for people to grasp and start using computer aided music systems.

Rounding out these points, it is easy to see how really excellent music making tools have become available for people at a price under a couple of thousand dollars. Even \$1,000 will land someone equipment and sounds that are leaps and bounds ahead of anything the music industry has ever had to offer.

Sadly, unnoticed is another feature that will appeal to any of you out there with strained backs. By mounting sound modules in a rack and sticking your computer in a road case, you will be able to take what really amounts to a mini recording studio around with you to your friend's place and even if you aren't getting paid as a member of the band. You tell me - isn't the idea of one keyboard and a box full of electrical gadgets more appealing than the half truck load of a mega-buck investment that is currently required to get all those sounds you want?

Yes, the age is upon us where, for instance in a live situation, computers are able to handle such diverse things as lighting sequences, chord sequences for synthesizers, drum machines, settings for equipment, signal processing for sound reinforcement effects, P.A. effects. All that is needed is catalyst positive enthusiasm from people like you who are willing to put aside misconceptions and get on with the business of using really incredible technology to follow your favourite pastime, music making.

Passport to new dimensions in music

by Ric Richardson

Back in the mid-seventies not many musicians associated computers with the development of their musical careers. Computers and high technology were the domain of engineers and scientists, not musicians. Then in 1976 the first computer controlled synthesizer was created and the music industry has never looked back.

This new breed of musician looked at music in a completely new light. After all, if the computer could help out writers, accountants and store attendants, assisting them to work faster and even more creatively, it should be capable of doing the more tedious chores of writing scores, even the not so tedious such as recording and even composing.

One of the first organizations to put together a software based recording package was Passport. With quite a heritage behind them, they have become very well known. In fact, enquiries to most music stores will find that their reputation is based around easy to use software, good pricing and due to their size, a slight lagging behind in the technology stakes. Which is to be expected since there have been an incredible deluge of advances in the last year in this field.

From a non-musician's point of view, or from that of a musician who is new to computer based music, the wide range of software available is a real boon. There are packages that allow you to write music in real time or in step time, recording as you go with your Commodore 64.

I have found their programs fairly bug free, and they have the advantage of

using an interface that has become very popular with various software manufacturers. So before we look at the software, let's have a look at the Passport MIDI interface.

Passport MIDI interface

The Passport interface is a piece of hardware that lets your MIDI instruments talk to your computer and vice versa. Without it your computer is just a computer and your MIDI instrument is just another instrument. But with it in place you will be able to

compose, record, edit, score, print, study and store music more easily and enjoyably than ever before.

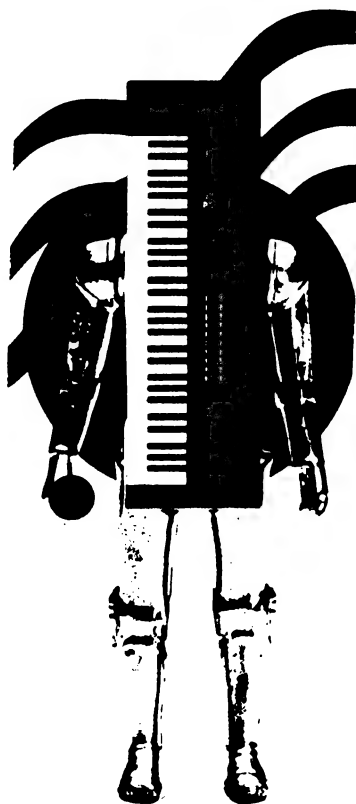
The fact that it is also a widely recognised standard as an interface configuration, means that more software developers and synthesizer manufacturers are designing their programs around its specifications. When you use the Passport interface you have access to the largest library of music application software on the market. Also of note is that the MIDI interface syncs up to MIDI tape and drum machines, which means that the computer can be slaved to a drum machine or to a tape recorder or even the reverse.

Passport MIDI 4+ or 8+

The next step needed is some software to convert your computer into a recording medium. You can do this with the aid of the Passport MIDI/4+ or the MIDI/8+, depending on your requirements.

These two packages provide four or eight tracks of recording respectively. The 4+ package is the cheapest way I have seen for starting out in computer aided music with the full MIDI system. Working alone, you can compose, orchestrate and arrange complete multi track recordings using the synthesizers or drum machines. The four separate channels can control individual keyboards simultaneously or the same channel can control several keyboards.

There is also a feature that means you don't have to worry about playing a sequence over and over again until you get it right. When a note or measure isn't just the way you want it, you're only a click away from fixing it. With the 4+ single step playback, fast forward and



MUSIC

rewind, the punch in and out features for editing allow you to do some very elaborate editing of any section of your work without affecting the rest of the music you have already put down. With those four separate channels you have unlimited overdubbing and access to all sixteen of the MIDI channel assignments.

The program has a built-in feature so that it can sync to and from tape recorders, other MIDI instruments and drum machines. There is also quantizing which is done in the reverse of the music data program. All the recording is done in real time and then you can quantise after the fact to take away any faults. It also boasts full polyphonic MIDI, which means that it can digitally record all controllers including velocity, pitch bend, preset changes after touch and

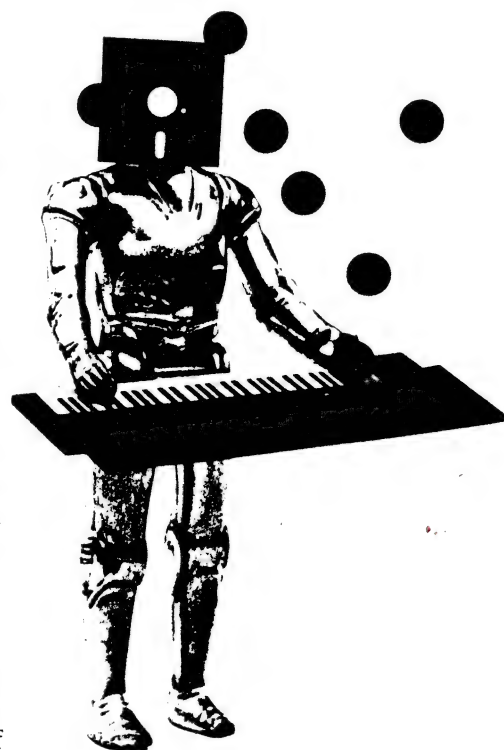
breath control features that are available on most synthesizers. And as to capacity, there is recording capability of over six thousand notes.

The MIDI8+ is a step beyond this, which allows for more sophisticated overdubbing and recording.

Recommended retail price for the MIDI 4+ is \$159 and for the 8+ \$259. Prices quoted for the interfaces range from \$250 through to \$400 depending on the features that you want and what particular computer you are using. But wherever you go, make enquiries of an interface and software package, making it a bit cheaper to buy both together.

Passport MIDI Player

A nice extension of these programs is some software called the Passport MIDI Player, which is really a way of



COMPUTER AIDED MUSIC



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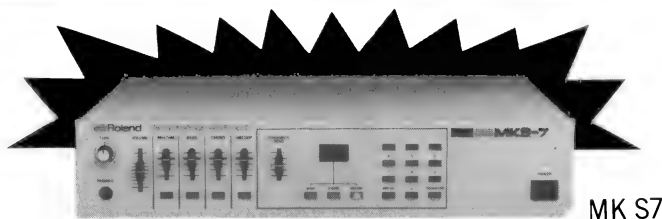
MUSIC

THE BEST GAME OF ALL



Computing, Mathematics, Art, Structure and Balance, infinite variation – Music is the teacher in the subtlest way, the way that gives great pleasure to all by their own natural expression.

And now in a single, simple to use module, ROLAND can expand your computer into a complete music system – drums, bass, polyphonic chord blocks and melody. Interfaced with keyboard and computer by uncomplicated midi connection and monitored on your own stereo system or portable cassette, the ROLAND MK S7 gives you the facility of a musical group in a recording studio*. That's not only great fun in education for all, but even an instant no-fuss tool for professional or amateur composers to quickly build and preview compositions without the technology bogging down the creative process. The computer has come alive with the greatest game of all – MUSIC.



MK S7


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W E D E S I G N T H E F U T U R E

*YOUR COMPUTER WILL REQUIRE MUSIC SOFTWARE

[Music]

combining the data from the MIDI 4+ and video graphics. Making, in effect, computer music videos. The idea is that you use your data disk from your MIDI 4+ program, as your set of instructions for an album of music, to be played when you hook your system up to a synthesizer.

This can be accompanied with preset computer graphics. You can arrange and digitally store a whole set or album of music on disk and play it back through your MIDI system in any designated order. While the music plays, the video screen will dance with high resolution graphics directly keyed to the tempo and pitch of the musical score for dramatic visual presentations.

Once you have put your recordings on MIDI payout, you will find you can use them in a variety of different ways. You will have sets of music that can be used for instant accompaniment, performing or practising. You will also be able to locate your work easily, entertain your friends, and send out demos for nightclub gigs or publishing. The system can handle eight songs per data disk, it plays back arrangements in the order that you designate and synchronises music playback with real time computer graphics.

Out of the box it contains eight commercial arrangements of pre-recorded music.

MIDI Player is available for \$175.

Passport Lead Sheeter

An extension on these programs is the Lead Sheeter Program from Passport. This is a printing software program that transcribes what you play and prints sheet music in the treble clef or bass piano score form.

If you are looking for a program that can produce simple lead sheets and fake books, Lead Sheeter is both efficient and inexpensive. The program takes the music you play on your MIDI keyboard and inscribes in real time with the option of auto corrections.



If you want to play in one key but have the music scored in another, just tell that to the computer and it will be transposed. When the music is being transcribed, you can enter and edit lyrics, chord symbols, markings and titles on screen. It is an inexpensive program that produces quality sheet music that is easy to read. I have found this program quite good in that, even when you try to trick it, it does copy faithfully what you have played, mistakes and all. Lead Sheeter has a recommended retail price of \$129.

There is a big brother to this system called the Polywriter which takes the tracks from either the MIDI 4+ or 8+ and puts them on sheet music as well. For enquiries of these we will talk of them in the future. If you are eager to know why not contact Musicomp Marketing or Rose Music for details.

Music Tutor

Of interest is another package called Music Tutor, a series of ear training aids for MIDI instruments covering chords, intervals and also a thing called a record keeper which enables a teacher to

investigate the progress of individuals who are working on the program.

Chords and intervals teach you to hear harmonies and chord structures and identify them. The program can sharpen your listening skills, making it easier to pick out melodies and chord progressions. As you work with the programs, both intervals and chords are presented visually and orally by name. You have the choice of making responses from either the computer keyboard or your MIDI synthesizer. Whether you are a teacher or self-taught student, the record keeper program lets you change any parameter in chords and intervals as well as keep and print accurate records of performance time, levels achieved and individual score charts.

Music Tutor is the ideal program to customise music education. The features include, in the chords program, drills on chord type inversion and top note, using full four voice chords. Chords can be replayed or arpeggiated up or down, and can use separate auditioning or soprano, alto tenor or bass fundamentals.

The intervals package features all intervals from unison to an octave. It uses intervals ascending or descending within or across an octave. It uses harmonic or melodic presentation as well as responding with interval name. Complete combinations of drill sections can be used. Each drill indicates if you have got the thing first time right and, if you don't, how many tries you've had at learning the lesson.

A nice touch is also a series of MIDI song albums that can use your MIDI synthesizer for playing back popular songs such as standards by the Beatles or popular music. Three MIDI albums are available, The Beatles, a collection of their greatest hits, Pops, a selection of today's popular music by top artists, and Sampler, a fine collection of Baroque masterpieces. This disk also allows you to playback your own compositions.



At the terminal *Business Communications*

by Paul Zabrs

A few investors or potential investors get into communications in order to keep abreast of current financial information. There are several sources of such electronic information, usually available 24 hours a day, covering local and overseas markets around the clock.

Such services are widespread in the US, but they concentrate mainly on the American markets. I have never failed to be impressed by the volume and promptness of various market data available on the Source, hoping that one day something similar becomes available here also. Not much happened for a while and when Viatel was first introduced all the hopes were dashed by the paucity of mainly out of date information provided.

But this was a year ago and much has changed since. The amount of business information on shares, futures, bonds etc. is simply staggering. What's more, the

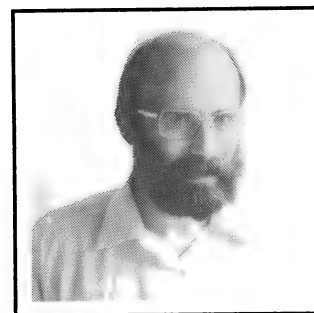
various data provided is very up to date, as the markets are trading. Just a brief look at pages *6000 and *4811 on Viatel would demonstrate the point.

Any Viatel subscriber can obtain current quotes for 1500 listed companies, various commodities etc., while the markets are open, and of course, closing prices at other times. The same information only few minutes behind the actual trading is also available for the various London, New York and Chicago markets. Because these markets trade mainly during our night time, only the very determined will become addicted to watching the updates. A serious trader may find it of advantage to scan various summaries every morning of our time after the US markets have closed.

Viatel's Money Watch, which is available on page *6000, also provides commentaries through the day with the time of writing clearly indicated. I must confess to not knowing all that can be accessed because I have not yet looked at all the relevant pages, so there could be much more than I am actually describing. But I know Telebroking is going to be available very soon.

One point bears mention here. It is very useful for the software with which you are accessing Viatel to be able to differentiate between colours of various numbers printed as this sometimes indicates whether a particular indicator is rising, steady or falling. Viaterm does that by using distinctly different character sets for different colours so that one can easily tell not only on a black and white screen, but also on paper.

Good as all this may sound, one must consider the disadvantages. First, although it is easy with good software to save each



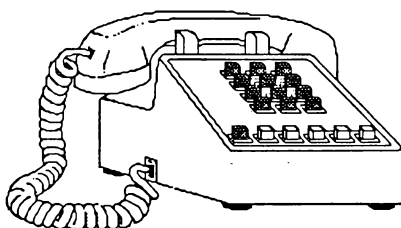
by Paul Zabrs

screen on disk and/or print it on paper, it is not practicable to receive it as an ASCII file. The second, more important point is cost. Some commentaries are 5c per page. However all the interesting pages are 10, 20 or even 30c a page. Thus it takes little time to run up a bill of \$10 or so. The answer is perhaps in using all the goodies judiciously. I hope that the page charges should drip as more and more people start using the service.

For those, who want to things truly on the cheap there is BERT which stands for Business and Economic Reporting Terminal. This service is provided for free (if you exclude the cost of a local call in Sydney or Melbourne). It runs at 1200 baud under the same Videotex system as does Viatel and the same software can be used to receive both. Share quotations, indices, exchange rates, gold prices etc. are presented, a page of information about every 20 seconds. It is a broadcasting service and there is nothing you can do from the keyboard to influence the presentation.

Orientation of this service is mainly towards local markets, and of course much less is available than on Viatel. I have a modicum of interest in the markets and for that reason dial up BERT about twice a day just to see what is going on. This service, which is financed by advertising is available on 211 0855 in Sydney and 67 7371 in Melbourne.

There are other services available catering to different situations which run under the standard TTY mode and not Videotex. But my knowledge of these is not sufficient for me to comment about





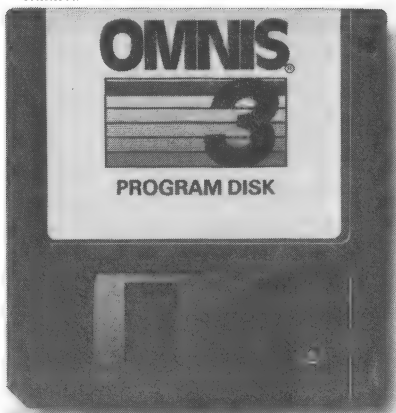
Lotus Jazz. Integrated word processing, business graphics, database management, data communications and worksheet.



Microsoft Chart. 42 different charts and graphs for presentations, sales reports and transparencies.



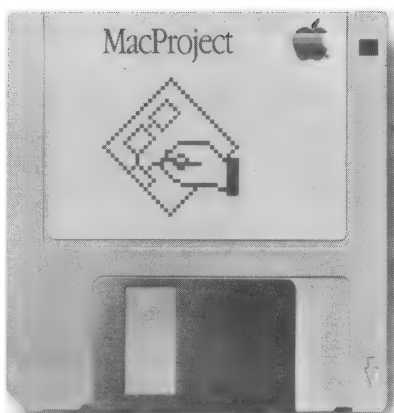
MacBusiness. Gain overall financial control of your small business with this integrated, intuitive accounting program.



Omnis 3 by Blyth Software. Single or multi-user data base manager featuring multiple file management and user definable menus.



PFS:File. Store and retrieve mailing lists, client records, collections, schedules and inventories.



MacProject. Create complex "critical path" flow charts for production schedules, timelines and managing projects.



ThinkTank 512. An idea processor to organise projects, manage details, outline ideas and support decisions.



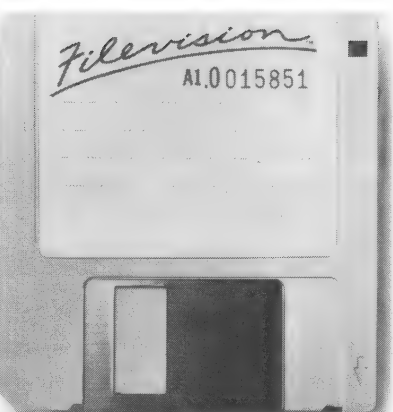
Microsoft Multiplan. Electronic spreadsheet for budget forecasting, business planning and "what if" analysis.



PageMaker by Aldus. Design newsletters, brochures, training manuals, presentations and more.



Microsoft Word. Full feature word processor for memos, personalised form letters, reports or any professional document.



Filevision. Visualise market trends, organise and track sales and present data in pictures.



MacVideotex. Access stock market, home banking, travel and other information via Telecom's Viatel videotex service.

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There are now more than 550 software programs available for the Macintosh computer.

Many of them wholly and solely devoted to making your working life more productive.

And there are hundreds more in the pipeline.

There are word processing programs with different typestyles and sizes that make reports and memos more memorable.

(Particularly when they're printed on our new LaserWriter printer, which produces publication-quality text and graphics.)

Data management programs that incorporate graphics to make your data even more manageable.

Spreadsheets that help you forecast,
budget and analyse. Without sending you to an
analyst.

Business graphics programs that turn rows and rows of numbers nobody understands into charts and graphics everybody understands.

Data communications programs that put a world of information – like stock quotes, yesterday's sales and today's business news – right at your fingertip.

Along with programs that no other office computer system can touch.

Like Microsoft Word, Living Videotext's ThinkTank 512, Omnis 3 by Blyth Software and the just-released Jazz from Lotus.

And our own MacProject, which creates sophisticated “critical path” charts that threaten to put common status reports on the endangered species list.

But more impressive than the sheer number of programs for the Macintosh is the sheer ease with which you can use them.

Thanks to Macintosh's windows, icons, pull-down menus and mouse technology, every Macintosh program works the same way. Learn one, and you've learned them all.

Which means not only will you have more time to do your job, but everyone else's job too.

(We said we'd make you more productive, we never said more popular.)



Adventurers' Corner

Voodoo Castle

by Ed Mehrrens

Voodoo Castle is the fourth in the Adventure International series and was originally written as a text base adventure by Scott Adams. It is now available as a high resolution adventure in the SAGA series, again by Adventure International. As with all of Scott Adams' adventures it is logical, if occasionally tricky, with that light hearted approach and humour, which is the hallmark of Scott Adams. *Voodoo Castle* is of moderate complexity, with no really difficult puzzles to solve and no mazes to map. With all of the Adventure International series you only need to enter the first three letters of any word, for it to be understood.

The story line is simple and stright forward, Count Cristo lies near death in his castle after being cursed by "a person or persons, unknown," who appear well versed in the black arts of voodoo. Your aim is to remove this curse and restore Count Cristo. To do this you will need to visit nearly all of the 24 rooms of the castle, be careful in mapping as there are seven rooms simply called "a room in the castle". Remember that Voodoo is a form of magic, so brute force will not work on any item associated with voodoo, however brute force will work on normal items. You do not need a vast knowledge of the black arts as all the information is available, if you can find it. So put on the record of Noel Coward singing "You do that voodoo, that you do so well", and enjoy Voodoo Castle.

My thanks to Garry Francis for supplying this information.

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Specific Clues

- | | |
|--|--|
| 1) <i>In the dark?</i>
50,60,31,26,60,21 | 22) <i>Sweep a problem?</i>
46,30 |
| (2) <i>What am I doing here?</i>
42,3,20,15,3,16 | (23) <i>Can't find a doll?</i>
42,60,63 |
| (3) <i>The window keeps slamming shut.</i>
65,40,60,24,14,26,60,29 | (24) <i>Can't break the curse?</i>
65,10,60,47,23,1,34,1,57,1,24,
14,1,31,3,18 |
| (4) <i>Can't move the ju-ju bag?</i>
56,60,21 | (25) <i>Still can't break the curse?</i>
43,47,23,41,35,1,13,15,1,62,57,
1,64,11 |
| (5) <i>Still can't move the ju-ju bag?</i>
25,60,33,35 | (1), |
| (6) <i>Is it boarded up?</i>
27,60,47,23,3,60,45,55 | (2) A |
| (7) <i>Is it still boarded up?</i>
48,60,39,22 | (3) AND |
| (8) <i>Gratings or bars a problem?</i>
61,60,51,52,26,60,29 | (4) BAG |
| (9) <i>Still can't get past the grating?</i>
46,60,8 | (5) BALL |
| (10) <i>Can't move the massive stone door?</i>
20,3,61,60,49,26,60,15 | (6) BE |
| (11) <i>Can't read the plaque?</i>
65,40,3,17,43 | (7) BROKEN |
| (12) <i>Letters too small?</i>
61,60,7,28 | (8) BUTTON |
| (13) <i>Crack in the wall a problem?</i>
62,60,35,4 | (9) CAN |
| (14) <i>The medium keeps vanishing?</i>
58,36 | (10) CARRY |
| (15) <i>Can't get out of the Medium's room?</i>
20,60,5 | (11) CHANT |
| (16) <i>Statue a problem?</i>
53,65 | (12) CHEMICALS |
| (17) <i>Can't lift the kettle?</i>
32,9,6,38 | (13) CIRCLE |
| (18) <i>Can't move the animal heads?</i>
61,60,7,59 | (14) CLOVER |
| (19) <i>Can't open the safe?</i>
56,60,44 | (15) COFFIN |
| (20) <i>Exploding chemicals a problem?</i>
61,60,54 | (16) CONTENTS |
| (21) <i>Can't fit through the tiny door?</i>
37,3,19,60,12 | (17) DARK |
| | (18) DOLL |
| | (19) DRINK |
| | (20) EXAMINE |
| | (21) FIREPLACE |
| | (22) FIRST |
| | (23) FOOT |
| | (24) FOUR LEAF |
| | (25) FREE |
| | (26) FROM |
| | (27) GET |
| | (28) GLASS |
| | (29) GRAVEYARD |
| | (30) HIM |
| | (31) IDOL |
| | (32) IT |
| | (33) JU-JU |
| | (34) KNIFE |
| | (35) MAN |
| | (36) MEDIUM |
| | (37) MIX |
| | (38) MOVED |
| | (39) NAILS |
| | (40) NEED |
| | (41) ON |
| | (42) OPEN |
| | (43) PLACE |
| | (44) PLAQUE |
| | (45) POCKET |
| | (46) PUSH |
| | (47) RABBITS |
| | (48) REMOVE |
| | (49) RING |
| | (50) RUB |
| | (51) RUSTY |
| | (52) SAW |
| | (53) SAY |
| | (54) SHIELD |
| | (55) SHOVEL |
| | (56) SOLVE |
| | (57) STICK |
| | (58) SUMMON |
| | (59) SWORD |
| | (60) THE |
| | (61) USE |
| | (62) WAVE |
| | (63) WINDOW |
| | (64) YELL |
| | (65) YOU |
| | (66) ZAP |



Taipan

Taipan is loosely based on the book of the same name by James Clavell and is set in the far east around the 1800's. The object of the game is to become a millionaire by trading. It is a change from the usual game of "whomp the monsters, get the gold" and as it is written in assembler, it is fast. There is good error checking and it is fun to play. The instructions are included on disk and it is easy to play, with single logical keys being used.

Taipan (Tai-Pan is pronounced Dai-Bawn) comes from the Chinese and means supreme leader or big boss. Comprador (or compradore) is Portuguese

The money lender, "Elder Brother" Wu, will gladly lend you money, up to twice as much as the cash you have at the time in fact. He does not consider his rates at 10% per month to be high, as no-one else will lend to you at all, but he does wish to be repaid. Your warehouse has a capacity of 10,000 units and when you are in Hong Kong you may transfer cargo between the ship and the warehouse. At this time you can overload your ship with transfers or large purchases, but naturally you can't sail while overloaded. To get from one port to another takes one month, prices vary from port to port and time to time in a random fashion.

Trading is in four commodities: general cargo, arms, silk and opium. You buy when something is cheap and sell when the price is high.



for agent.

You have a small boat and the choice of starting with a small amount of working capital and a debt, or 5 guns and no debts, but no working capital. Both are equally good, but with the 5 gun start you have to find and defeat some pirates before you can get any money. From then on the games are identical.

Trading is the way to fame and fortune, your company is based at Hong Kong and it is there that most of the facilities are based such as the shipyards, the bank, a money lender and your warehouse. All the other six places are trading centers only. The shipyard will repair your ship, if it has been damaged by pirates, but it will be expensive. The bank will allow you to deposit and withdraw money in complete safety, it will not give loans as your occupation is too risky, however interest is paid at 6% per year on all money deposited there.

When you start you will deal mainly in general cargo and arms, gradually moving up to silk and finally to the ultimate cargo - Opium. Opium is a dangerous cargo, as officials will occasionally confiscate it and fine you. For this reason do not carry more opium than you can afford to lose, however opium is the big money winner.

Other things than confiscation of opium can occur, warehouse robberies can halve your warehouse stocks, thugs can beat you and steal any ready cash, but by far the biggest danger is pirates. Independent pirates fear only the greatest pirate of all, Li Yuen, to whom all the wise traders pay tribute. If you do not pay and you meet Li's pirates they will attack and they always travel in large fleets. I advise paying the tribute, as his fleet is extremely large. This is not to say that nothing can be done about pirates, you can fight if you have guns

aboard your ship (not arms which is cargo), or you can try to outrun them. If you can not seem to escape by running, throw some cargo overboard for greater speed, you can throw all the cargo by pressing "*"

From time to time you will be offered large ships and guns, for a price. If you can use the extra capacity it can be well worth it, but if you are still in the early part of the game it probably is not worthwhile. Ships and guns do enable you to fight pirates but they take 10 units each from the cargo carrying capacity of your ship. If you fight pirates and win you will collect some booty. It is best to avoid large numbers of pirates as your ship will be damaged in the fighting. Double the number of guns you have is the maximum number of ships you can fight without major damage.

Scoring is based on the amount of money you have versus how long it took to get it. When you have over a million and are in Hong Kong you will be offered the choice to quit, and your score will then be assessed. There are five grades depending on your score. All commands are by single keystroke except for numbers. If you make an error type in the correct letter (which will replace the error) or use the arrow keys.

Some Hints

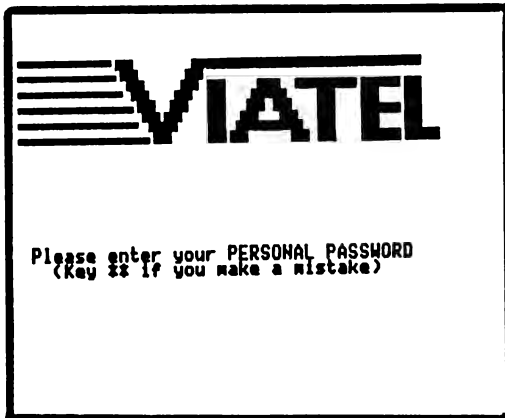
- (1) Pay off debt to Wu as fast as possible
- (2) Keep some money in the bank in case of robbery
- (3) Always leave 10 units free on the ship to allow purchase of an extra gun.
- (4) Pay Li Yuen's tribute.
- (5) Never carry more opium than you can afford to lose.
- (6) Keep your ship in good repair.
- (7) Go straight to Hong Kong when Li Yuen says immediately.
- (8) Make Hong Kong every 2nd trip early in the game.
- (9) Buy larger ships if you can use the extra capacity, but not early in the game.
- (10) Run from large numbers of pirates and dump cargo if necessary.

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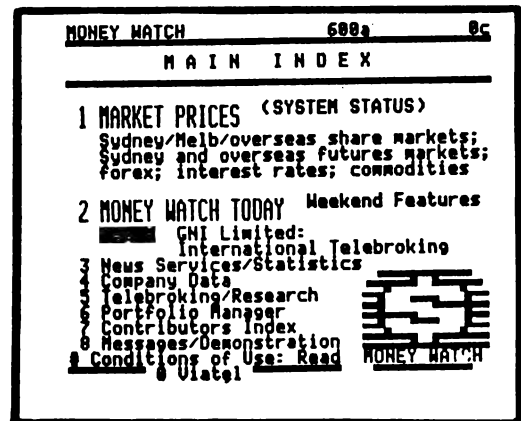


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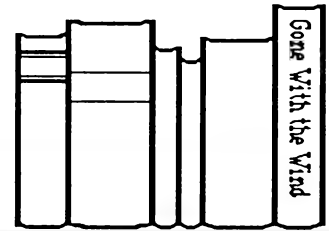
• written by Paul Zabrs
author of TERMINAPPLE



VIATEL GAMES

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Bookshelf



by Gene Stephan

Well, it just goes to show that if you complain long enough, someone is bound to hear. Not one of this month's books will tell you how to switch on your Apple, and not one will offend your intelligence by teaching such interesting things as how to insert a disk into its jacket. All three in fact are packed with code and each is guaranteed to appeal to a good cross-section of Apple II users.

Title: Design and Graphics Using the Apple Computer. An Engineers Guide

Autor: Clifford Sayre, Jr

Publisher: Reston (Prentice Hall)

Size: 27.5cm by 20.5cm by about 205 pages

Cost: \$53.95

This is not the cheapest of books that I have seen on the topic, but it is one of the better. The book is simple to read with plenty of examples, yet becomes quite advanced in the topics it addresses.

Design and Graphics Using the Apple was written as a text for engineering students and according to the author, "to enable practising engineers to gain an understanding of some of the internal features of the computer graphics or CAD programs they may be using."

For those not familiar with the acronym, CAD stands for Computer Aided Design, which up until recently has fallen exclusively into the domain of mainframes and superminis. As the power of the micro has increased, particularly with respect to storage, CAD software has found its way to the Mac and the Apple IIs. Perhaps the major limiting factor of CAD on the IIs is the screen resolution. Using HGR2, the resolution is only 280 by 192 - great for games or bar charts, but not fantastic for fine drawing.

The drawing is the important component here as the end result of CAD software is to produce a design, blueprint, plan, circuit-board etc, by using the computer instead of the draftsman's pencil and paper. Masterpieces created are stored to disk and can be modified, reproduced in multiple copies on plotters or sent as files to computers next door or overseas.

While the book doesn't hand you CAD software on a platter, it is very heavy in graphics examples (code) and will

give you a good background spread across eleven chapters. Chapter One is a brief introduction, Chapter Two deals with plotting points and lines, Chapter Three discusses and presents a number of menus including data entry screens, Chapter Four is titled '2-D Transformations and Related Functions' and deals with matrix operations, scaling, rotation and reflection while Chapter Five deals with 3-D graphics.

This ends the introductory section to the book and brings us to Chapter Six, The Design Process. This chapter is four and a bit pages of text and half a page of references. And, it proves that you really don't need a lot of words to get a crucial point across. Quoting from the second paragraph, "The primary goal of the process of design is to predict the performance of the prototype system. Design is a specialized form of problem solving."

```

10 REM SINE WAVE
20 HOME : HGR : HCOLOR = 3
30 PI = 3.14159
40 GOSUB 1000 : REM PLOT AXES
45 HOME
50 VTAB 24 : PRINT "YV = A*SIN(2*PI*XT/TI +
  PHASE ANGLE)"
60 VTAB 21 : PRINT "ENTER AMPLITUDE A < ":MY::
  INPUT " <CR>: ";A
70 VTAB 22 : PRINT "ENTER PERIOD TI < ":2 * MX::
  INPUT " <CR>: ";TI
80 VTAB 21 : INPUT "ENTER PHASE ANGLE PH IN
  DEGREES <CR>: ";PH
90 PH = PH * PI / 180
100 DEF FN V(T) = - A * SIN (2 * PI * T / TI + PH)
120 DT = 1
130 FOR XT = - MX TO (MX - 1) STEP DT
140 YP = FN V(XT) * 160 / (2 * MY)
145 XP = XT * 280 / (2 * MX)
150 HPLLOT XP + XC,YP + YC
160 NEXT XT
165 VTAB 24
170 INPUT "ANOTHER PLOT ? Y OR N <CR>: ";A$
180 IF A$ = "Y" GOTO 40
190 HOME : TEXT : END
1000 REM AXES PLOT
1010 HOME : HGR : HCOLOR = 3
1020 XC = 140 : YC = 80
1030 HPLLOT 0,YC TO 279,YC
1040 HPLLOT XC,0 TO XC,159
1050 VTAB 21: INPUT "MAX X <CR>: ";MX
1060 VTAB 22 : INPUT "MAX Y <CR>: ";MY
1070 VTAB 21 : INPUT "X SCALE TIC MARK INCREMENT
  <CR>: ";X1
1080 VTAB 22 : INPUT "Y SCALE TIC MARK INCREMENT
  <CR>: ";Y1
1090 TX = 278 * X1 / (MX * 2)
1100 TY = 158 * Y1 / (MY * 2)
1110 FOR X = 1 TO 279 STEP TX
1120 HPLLOT X,YC TO X,YC + 5
1130 NEXT X
1140 FOR Y = 1 TO 159 STEP TY
1150 HPLLOT XC - 5,Y TO XC,Y
1160 NEXT Y
1170 RETURN

```

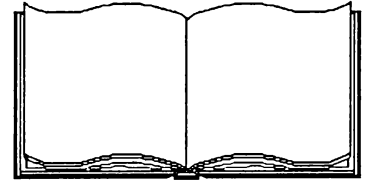
The process of design is often described as a series or sequence of steps:

1. Recognition (of the problem)
2. Definition (deciding what needs to be solved)
3. Data and information gathering (how to get the information in)
4. Analysis (how to manipulate the data)
5. Synthesis (what from the analysis is needed for the solution)
6. Evaluation (is the problem solved?)
7. Optimisation (has the solution been achieved efficiently?)
8. Presentation (showing the work to best effect)".

These steps hold not just for CAD, but are also good guidelines for programming in general.

Chapter Seven deals with file management and has the longest code example - a Fourier harmonic analysis program over about six pages, showing the use of sequential files for input and data storage, and creation and analysis of waveforms. Chapter Eight, Interactive Programs, continues by explaining and showing how user entered functions can be included in the program (propellor-hull example), and Chapter Nine deals with graphics systems design.

The only disappointments for me (apart from the price) were Chapters Ten and Eleven. These aren't too long and deal with what could best be placed in the introductory chapter (Apple hardware considerations and items as Koala pads



and light pens) or into another appendix (acronyms) - although this is not to say the chapters do not have good information. It just seemed to me that by the time I got to them, I should have already known what was there, and possibly Clifford finished the work and then said "Oh no, I forgot..."

Still, overall a very good book for someone with an interest in CAD, an Apple II, and not enough dollars to buy 16 or 32 bit power and resolution, with masses of storage.

Title: Hi-Res Graphics and Animation Using Assembly Language.

Author: Leonard Malkin

Publisher: Hayden

Size: 27.5cm by 20.5cm by about 315 pages

Hi-Res Graphics and Animation Using Assembly Language is a hefty book - large in size and weighing a bit, and so, it wasn't too much of a surprise to read the dedication, "To Diane, Sonya, and Joshua, with whom I can now get reacquainted.". However, while reading and keying in snippets of code, one did get the feeling that the author was a lost soul who used his work to get away from his family and play for countless hours with his Apple.

The book is very well done, taking someone with "no experience necessary" or with some knowledge of assembler, on a trip into machine graphics via a game. What this game lacks in finesse when compared to for example, Electronic Arts software, it certainly makes up for by presenting and explaining all the code. Indeed, one can sense the pride Dr Malkin must have been feeling in getting bullets to zip

across the screen, and in creating his little limericks preceding each chapter;
*"Moving up and down and to and fro
Is easy enough as you well know,
But moving at an angle
Can cause quite a tangle
As you change each column and row."*

If this makes the book appear trivial, let me assure you, this is not the case. There are two parts to the book, Part One dealing with the game and the basics and Part Two dealing with advanced techniques. There are then chapters in Part One beginning with a description of binary, hex and the hardware limitations and progressing through drawing and moving shapes, detecting collisions, making suitable noises and scoring.

The style through this section, as right through, is very easy, with constant invitations to the reader to try it out on the computer.

Part Two has a further seven chapters which deal with colour, double hi-res (IIs and B revision IIs with 128K), curved movement, drawing over backgrounds, advanced paddle and joystick routines, and the integration of BASIC code with machine. The appendix contains a list of assembly language commands - primarily those used in the

So much for the easy part, now for the mind-bender. Designing a complicated program, such as one that integrates multiple moving shapes, is best done, at least in my experience, by paying particular attention to the program flow-chart, long before getting into extensive program details (this is always a good idea but is especially important for difficult programs). We'll be examining the flowchart for Program 6-4 in detail shortly. A further point regarding multiple shape programs, and one alluded to briefly in the bullet section above, is that each shape has essentially its own program within a program. For example, in Program 6-4, the bullet shape employs BINITIAL, BDRAW, BSHPADR, BHORIZ, etc., while the person shape uses its own set of labels and routines such as MINITIAL, MDRAW, MHORIZ, etc. (M stands for Man; let's face it, a man is more likely to be firing bullets at passing planes than a woman (a sad commentary?). In any case, P for Person is not used because it is used for Plane in later programs.) The use of these separate routines and labels is a necessity, but a welcome one, because they make the program much easier to write and read.

from *Hi-Res Graphics and Animation Using Assembly Language*

BOOK REVIEWS

text and certainly not all the 6502 mnemonics, and description.

It is difficult to give a good feel for this book because there is so much to be gleaned from it - so much that the space devoted to the Bookshelf in *The Australian Apple Review* could be easily filled with this book alone. It is however not the sort of book which can be picked up and browsed as a manual. To gain the most it is necessary to sit down at the

computer and work through from start to finish. I liked it because Malkin uses a talkative style yet still gives the hard facts. The following text and the code will give some idea. Overall, it is very easy to recommend Hi-Res Graphics and Animation Using Assembly Language to someone with time up their sleeves and a desire to move shapes on an Apple screen.

```

1  *PADDLE CONTROL OF HORIZONTAL MOVEMENT AND SHOOTING BULLETS
2  ORG $6000
3  JMP PGM
6000: 4C 52 60

4  MLINE DS 1
5  MLINEA DS 1
6  BLINE DS 1
7  DEPTH DS 1
8  MHORIZ DS 1
9  BHORIZ DS 1
10 HORIZB DS 1
11 HORIZM DS 1
12 BULON DS 1
13 XCOUNT DS 1
14 DELAY DS 1
15 BTEMP DS 1
16 MTEMP DS 39

17 GRAPHICS = $C050
18 MIXOFF = $C052
19 HIRE = $C057
20 PAGE1 = $C054
21 HIGH = $1B
22 LOW = $1A
23 WAIT = $FCAB
24 PREAD = $FBIE
25 BUTTON = $C061 ;BUTTON 0
26 *LOAD SHAPE ADDRESSES INTO SHPADR, LOW BYTE FIRST
27 *CONTINUE FOR ALL 7 SHAPES
28 MSHPADR DFB <MSHAPE1
29 DFB <MSHAPE1
30 DFB <MSHAPE2
31 DFB <MSHAPE2
32 DFB <MSHAPE3
33 DFB <MSHAPE3
34 DFB <MSHAPE4
35 DFB <MSHAPE4
36 DFB <MSHAPE5
37 DFB <MSHAPE5
38 DFB <MSHAPE6
39 DFB <MSHAPE6
40 DFB <MSHAPE7
41 DFB <MSHAPE7
42 BSHPADR DFB <BSHAPE1
43 DFB <BSHAPE1
44 DFB <BSHAPE2
45 DFB <BSHAPE2
46 DFB <BSHAPE3
47 DFB <BSHAPE3
48 DFB <BSHAPE4
49 DFB <BSHAPE4
50 DFB <BSHAPE5
51 DFB <BSHAPE5
52 DFB <BSHAPE6
53 DFB <BSHAPE6
54 DFB <BSHAPE7
55 DFB <BSHAPE7
56 PGM LDA GRAPHICS ;HIRE,P.1
57 LDA MIXOFF
58 LDA HIRE
59 LDA PAGE1
60 LDA $00 ;CLEAR SCREEN 1
61 STA LOW
62 LDA $20
63 STA HIGH
64 LDY $00
65 LDA $00
66 CLR STA (LOW),Y
67 INY
68 BNE CLR
69 INC HIGH
70 LDA HIGH
71 CMP $A0
72 BLT CLR1
73 LDA $50 ;LOAD DELAY
74 STA DELAY

607C: A2 B7 75 LDX #B7 ;DRAW LINE
607E: A0 00 76 LDY #00
6080: BD DC 64 77 LDA M1,X
6083: 85 1B 78 STA HIGH
6085: BD 9C 65 79 LDA LO,X
6088: 85 1A 80 STA LOW
608A: A9 7F 81 LDA #7F
608C: 91 1A 82 LN STA (LOW),Y
608E: C8 83 INY
608F: C0 27 84 CPY #27
6091: 90 F9 85 BLT LN
86 ***** MAIN PROGRAM *****
6093: 20 E4 60 87 JSR MINITIAL ;SET LINE & DEPTH OF MAN
6096: 20 F3 60 88 JSR BINITIAL ;SET LINE FOR BULLET
6099: 20 FE 60 89 PADDLE JSR PDLE ;READ PADDLE
609C: 20 39 61 90 JSR MORAW ;DRAW MAN
609F: AD 0B 60 91 LDA BULON
60A2: C9 01 92 CMP #01 ;IS BULLET ON?
60A4: F0 16 93 BEQ BULLET ;IF YES, CONTINUE BULLET DRAW
60A6: AD 61 C0 94 LDA BUTTON ;IF NO, IS BUTTON PRESSED?
60A9: 30 0C 95 BMI BULLET1 ;IF YES, DRAW BULLET
60AB: AD 00 60 96 LDA DELAY ;IF NO,
60AE: 20 A8 FC 97 JSR WAIT DELAY AND
60B1: 20 39 61 98 JSR MORAW ERASE MAN AND
60B4: 4C 99 60 99 JMP PADDLE READ PADDLE AGAIN
60B7: A9 01 100 BULLET1 LDA #01 ;SET BULLET ON
60B9: 80 0B 60 101 STA BULON
60BC: 20 83 61 102 BULLET JSR LOADBUL ;LOAD BULLET SHAPE INTO BTEMP
60BF: 20 A6 61 103 JSR BORAW ;DRAW BULLET
60C2: AD 00 60 104 LDA DELAY
60C5: 20 A8 FC 105 JSR WAIT ;DELAY
60C8: 20 A6 61 106 JSR BORAW ;ERASE BULLET
60CB: 20 39 61 107 JSR MORAW ;ERASE MAN
60CE: AD 05 60 108 LDA BLINE
60D1: 38 109 SEC
60D2: E9 08 110 SBC #08 ;MOVE BLINE UP 8 LINES
60D4: 80 05 60 111 STA BLINE
60D7: C9 05 112 CMP #05 ;LESS THAN 5 LINES FROM TOP?
60D9: 90 03 113 BLT TOP ;IF YES TAKE BRANCH
60DB: 4C 99 60 114 JMP PADDLE ;IF NO, READ PADDLE AGAIN
60DE: 20 F3 60 115 TOP JSR BINITIAL ;INITIALIZE BULLET LINE
60E1: 4C 99 60 116 JMP PADDLE ;READ PADDLE
117 ***** SUBROUTINES *****
60E4: A9 AA 118 MINITIAL LDA #AA
60E6: 80 03 60 119 STA MLINE
60E9: 80 04 60 120 STA MLINEA
60EC: 18 121 CLC
60ED: 69 00 122 ADC #00
60EF: 80 06 60 123 STA DEPTH
60F2: 60 124 RTS
125 *****
60F3: A9 00 126 BINITIAL LDA #00 ;BULON = 0 IF
60F5: 80 0B 60 127 STA BULON BULLET NOT ON SCREEN
60F8: A9 A4 128 LDA #A4
60FA: 80 05 60 129 STA BLINE
60FD: 60 130 RTS
131 *****
60FE: A2 00 132 PDLE LDX #00
6100: 20 1E FB 133 JSR PREAD ;READ PADDLE 0
6103: 98 134 TYA
6104: 80 07 60 135 STA MHORIZ ;0-255 IN MHORIZ
6107: AD 0B 60 136 LDA BULON
610A: C9 01 137 CMP #01 ;IS BULLET ON?
610C: F0 06 138 BEQ PDLE1 ;IF YES, TAKE BRANCH
610E: AD 07 60 139 LDA MHORIZ ;IF NO, SET BHORIZ EQUAL
6111: 80 08 60 140 STA BHORIZ TO MHORIZ
6114: AC 07 60 141 LDY MHORIZ
6117: 89 06 62 142 LDA BYTETBL,Y ;CONVERT 0-255 TO 0-36 (BYTE);
611A: 80 0A 60 143 STA HORIZM ;MAN BYTE POSITION
611D: 89 09 63 144 LDA OFFSET,Y ;GET SHAPE NUMBER
6120: 0A 145 ASL ;LOAD SHAPE INTO MTEMP
6121: AA 146 TAX
6122: BD 36 60 147 LDA MSHPADR,X
6125: 85 1A 148 STA LOW

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BOOK REVIEWS

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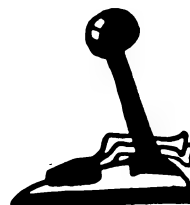
6127: 8D 37 60 149 LDA MSHPADR+1,X
612A: 85 18 150 STA HIGH
612C: A0 00 151 LDY #000
612E: B1 1A 152 LOAD LDA (LOW),Y
6130: 99 0F 60 153 STA MTEMP,Y
6133: C8 154 INY
6134: C0 27 155 CPY #027
6136: 90 F6 156 BLT LOAD
6138: 60 157 RTS
        *****
6139: A9 00 159 MDRAW LDA #000
613B: 8D 0C 60 160 STA XCOUNT
613E: AE 03 60 161 MDRAW1 LDY MLINE
6141: AC 0A 60 162 LDY HORIZM
6144: BD DC 64 163 LDA H1,X
6147: 85 18 164 STA HIGH
6149: BD 9C 65 165 LDA LO,X
614C: 85 1A 166 STA LOW
614E: AE 0C 60 167 LDX XCOUNT
6151: B1 1A 168 LDA (LOW),Y
6153: 5D 0F 60 169 EOR MTEMP,X
6156: 91 1A 170 STA (LOW),Y
6158: C8 171 INY
6159: B1 1A 172 LDA (LOW),Y
615B: 5D 10 60 173 EOR MTEMP+1,X
615E: 91 1A 174 STA (LOW),Y
6160: C8 175 INY
6161: B1 1A 176 LDA (LOW),Y
6163: 5D 11 60 177 EOR MTEMP+2,X
6166: 91 1A 178 STA (LOW),Y
6168: EE 0C 60 179 INC XCOUNT
616B: EE 0C 60 180 INC XCOUNT
616E: EE 0C 60 181 INC XCOUNT
6171: EE 03 60 182 INC MLINE
6174: AD 03 60 183 LDA MLINE
6177: CD 06 60 184 CMP DEPTH
617A: 90 C2 185 BLT MDRAW1
617C: AD 04 60 186 LDA MLINEA ;RESET LINE
617F: 8D 03 60 187 STA MLINE
6182: 60 188 RTS
        *****
6183: AC 08 60 190 LOADRUL LDY BHORIZ ;CONVERTS 0-255 TO
6186: B9 D6 62 191 LDA BYTETBL,Y ;SCREEN BYTE (0-36)
6189: 18 192 CLC ;ADD 2 TO ALIGN BULLET
618A: 69 02 193 ADC #02 ;WITH GUN
618C: 8D 09 60 194 STA HORIZB ;BULLET BYTE POSITION
618F: B9 D9 63 195 LDA OFFSET,Y ;GET BULLET SHAPE NUMBER
6192: 0A 196 ASL ;LOAD BULLET SHAPE INTO BTEMP
6193: AA 197 TAX
6194: BD 44 60 198 LDA BSHPADR,X
6197: 85 1A 199 STA LOW
6199: BD 45 60 200 LDA BSHPADR+1,X
619C: 85 18 201 STA HIGH
619E: A0 00 202 LDY #000
61A0: B1 1A 203 LDA (LOW),Y
61A2: 8D 0E 60 204 STA BTEMP
61A5: 60 205 RTS
        *****
61A6: AE 05 60 207 BDRAW LDX BLINE
61A9: AC 09 60 208 LDY HORIZB
61AC: BD DC 64 209 LDA H1,X
61AF: 85 18 210 STA HIGH
61B1: BD 9C 65 211 LDA LO,X
61B4: 85 1A 212 STA LOW
61B6: B1 1A 213 LDA (LOW),Y
61B8: 4D 0E 60 214 EOR BTEMP
61BB: 91 1A 215 STA (LOW),Y
61BD: 60 216 RTS
61BE: 00 0E 01 217 MSHAPE1 HEX 000E01000E01000E01 ;MAN SHAPE TABLES
61C1: 00 0E 01 00 0E 01
61C7: 00 44 01 218 HEX 004401007F00601F00
61CA: 00 7F 00 60 1F 00
61D0: 30 1F 00 219 HEX 301F00181F00001F00
61D3: 18 1F 00 00 1F 00
61D9: 00 1F 00 220 HEX 001F00001800403100
61DC: 00 18 00 40 31 00
61E2: 60 60 00 221 HEX 606000
61E5: 00 1C 02 222 MSHAPE2 HEX 001C02001C02001C02
61E8: 00 1C 02 00 1C 02
61EE: 00 08 03 223 HEX 000803007E01003E00
61F1: 00 7E 01 00 3E 00
61F7: 00 3F 00 224 HEX 003F00403F00003E00
61FA: 40 3F 00 00 3E 00
6200: 00 3E 00 225 HEX 003E00003600003600
6203: 00 36 00 00 36 00
6209: 00 63 00 226 HEX 006300
620C: 00 38 04 227 MSHAPE3 HEX 003804003804003804
620F: 00 38 04 00 38 04
6215: 00 10 06 228 HEX 001006007C03007C00
6218: 00 7C 03 00 7C 00
621E: 00 7C 00 229 HEX 007C00007E00007C00
6221: 00 7E 00 00 7C 00
6227: 00 38 00 230 HEX 003800003800006C00
622A: 00 38 00 00 6C 00
6230: 00 46 01 231 HEX 004601

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6233: 00 70 08 232 MSHAPE4 HEX 007008007008007008
6236: 00 70 08 00 70 08
623C: 00 20 0C 233 HEX 00200C007807007801
623F: 00 78 07 00 78 01
6245: 00 78 01 234 HEX 007801007801007801
6248: 00 78 01 00 78 01
624E: 00 70 00 235 HEX 007000007000007000
6251: 00 70 00 00 70 00
6257: 00 70 00 236 HEX 007000
625A: 00 60 11 237 MSHAPE5 HEX 006011006011006011
625D: 00 60 11 00 60 11
6263: 00 40 18 238 HEX 00401800700F007003
6266: 00 70 0F 00 70 03
626C: 00 70 03 239 HEX 007003007803007003
626F: 00 78 03 00 70 03
6275: 00 60 01 240 HEX 006001006001003003
6278: 00 60 01 00 30 03
627E: 00 18 06 241 HEX 001806
6281: 00 40 23 242 MSHAPE6 HEX 004023004023004023
6284: 00 40 23 00 40 23
628A: 00 00 31 243 HEX 00003100601F006007
628D: 00 60 1F 00 60 07
6293: 00 70 07 244 HEX 007007007807006007
6296: 00 78 07 00 60 07
629C: 00 60 07 245 HEX 006007006006006006
629F: 00 60 06 00 60 06
62A5: 00 30 0C 246 HEX 00300C
62A8: 00 00 47 247 MSHAPE7 HEX 000047000047000047
62AB: 00 00 47 00 00 47
62B1: 00 00 62 248 HEX 00006200403F00700F
62B4: 00 40 3F 00 70 0F
62BA: 00 58 0F 249 HEX 00580F0040C0F00400F
62BD: 00 4C 0F 00 40 0F
62C3: 00 40 0F 250 HEX 00400F004000006018
62C6: 00 40 00 00 60 18
62CC: 00 30 30 251 HEX 003030
62CF: 01 252 BSHAPE1 HEX 01 ;BULLET SHAPES
62D0: 02 253 BSHAPE2 HEX 02
62D1: 04 254 BSHAPE3 HEX 04
62D2: 08 255 BSHAPE4 HEX 08
62D3: 10 256 BSHAPE5 HEX 10
62D4: 20 257 BSHAPE6 HEX 20
62D5: 40 258 BSHAPE7 HEX 40
        BYTETBL
        OFFSET
        HI
        LO

```



BOOK REVIEWS

Title: Apple II Applications - Forty Programs for Your Apple.

Author: Brian Flynn and Christopher Flynn

Publisher: Compute!

Size: 22.5cm by 15.5cm by about 375 pages

There are plenty of books around with code for Apples. Probably these days they are less popular than a few years ago when there wasn't so much software floating around on disk, but they still attract good sales as they are the most cost-effective way of building up a software library short of public domain.

The problem with these books is that time must be devoted to the laborious process of just keying in code. And, this type of keying in is different to the type as presented in the book reviewed above - there is no explanation of what is being done and why, so the keyer-interer must just grin and bear line after line of clanking way at the keyboard without any feedback on what is to be achieved, how the screens will look or if indeed there are any bugs in the program or introduced as typos.

A few months ago I reviewed one such book, and found it excellent value for money. *Apple II Applications - Forty Programs for Your Apple* can be put into the same category, though it is a bit more expensive. However, there is - for better or worse - a more diverse set of programs.

Without itemising each one I will skim over the chapters. Chapter One is an introduction briefly telling you that an Apple is required before any of the code can be entered. Chapter Two is devoted to 'Games of Skill' and here ten games are presented from Tic-Tac-Toe (noughts and crosses) to The Witching Hour, a strategy game for two players requiring a bit of grey matter, with the code stretching over about nine pages of the book.

Chapter Three deals with 'Household Helpers' - the code one keys in when one is desperate to use the Apple as a calculator and not a computer. Four programs are given and each is pretty useless. Chapter Four however returns useful programs and here six educational programs suitable for younger children are presented, including a clock face to tell the time.

Chapters Five and Six give altogether five programs useful for 'business'. The word is in inverted commas as the programs could not be used for running a large company, however, the spreadsheet program will give a very cheap introduction to that type of software. It is the longest program stretching almost twenty pages of the book and though I did not key in the code, from the description it does offer all the basic features one is likely to encounter in a commercial spreadsheet.

Chapter Seven is the final chapter and this gives six programs under the heading 'Science and Statistics'. Included here is statistics code, including curve fitting (no graphics) and

the Test. A curve plotter program is also given in this section, and I have included this as the representative example.

```
EE 100 LOMEM: 17000
50 110 REM CURVE PLOTTER
40 120 : REM INITIALIZE
40 130 GOSUB 300
A3 140 : REM PLOT CURVE
54 150 GOSUB 950
5F 160 : REM CHOOSE FROM MENU
E3 170 GOSUB 1820

93 180 ON PICK GOSUB 2070,2190
12 190 IF PICK < > 3 THEN 170
E0 200 TEXT : HOME : PRINT "BYE-BYE"
0C 210 END
93 220 REM EQUATION
A6 230 ONERR GOTO 270
A6 240 Y = 900 / X
00 250 E$ = "OFF": POKE 216,0: GOTO 290
4C 260 : REM INVALID X
09 270 E$ = "ON"
30 280 POKE 216,0: CALL - 3288
24 290 RETURN
A6 300 REM INITIALIZE
40 310 : REM TITLE
41 320 GOSUB 400
FE 330 : REM INSTRUCTIONS
51 340 GOSUB 460
0C 350 : REM KEY VALUES
50 360 GOSUB 570
F9 370 : REM SHAPES
50 380 GOSUB 670
25 390 RETURN
25 400 REM TITLE
20 410 PRINT CHR$(21): TEXT : HOME
22 420 VTAB 12: HTAB 13: PRINT "CURVE PLOTTER"
7C 430 FOR PAUSE = 1 TO 1500: NEXT
0F 440 BELL$ = CHR$(7):Z = - 16336: REM CLICK
1E 450 RETURN
0A 460 REM INSTRUCTIONS
55 470 HOME
73 480 PRINT "THIS PROGRAM PLOTS A CURVE FOR YOU.":
PRINT
34 490 PRINT "IS THE EQUATION OF THE CURVE NOW IN"
04 500 VTAB 4: HTAB 1: PRINT "LINE 240 OF THE PROGRA
M (Y/N) ? ":BELL$:
50 510 GET S$
0C 520 A = ASC (S$): IF A > 96 THEN A = A - 32
30 530 S$ = CHR$(A)
A4 540 IF S$ = "N" THEN VTAB 6: HTAB 1: PRINT "PLEAS
E PUT IT THERE, AND ": INVERSE : PRINT "RUN"
: NORMAL : PRINT " AGAIN.": STOP
37 550 IF S$ < > "Y" THEN GOTO 500
21 560 RETURN
A4 570 REM KEY VALUES
50 580 HOME
A0 590 VTAB 12: HTAB 16: PRINT "READING"
A2 600 : REM MENU OPTIONS
AF 610 DATA TALLY Y,CHANGE TIC INTERVALS,QUIT
39 620 FOR I = 1 TO 3: READ M$(I): NEXT
0F 630 : REM DELTA BETWEEN TIC MARKS
11 640 DATA 25,25
39 650 READ XD,YD
22 660 RETURN
00 670 REM SHAPES
0A 680 : REM DIRECTORY
96 690 DATA 14,0,30,0,44,0,55,0,69,0,78,0,90,0,103,0
,114,0,127,0
AF 700 DATA 140,0,151,0,165,0,177,0,180,0
03 710 : REM X & Y
E9 720 DATA 12,12,60,27,51,14,22,23,46,9,33,28,7,0
43 730 DATA 5,40,32,31,27,54,49,54,6,0
55 740 : REM 0 TO 9, & DECIMAL
A2 750 DATA 12,37,28,63,23,54,46,55,14,45,12,36,4,0
50 760 DATA 36,60,42,54,54,46,63,7,0
2A 770 DATA 45,32,28,63,23,22,17,23,46,45,37,0
C3 780 DATA 37,5,32,63,63,22,18,50,41,45,32,4,0
1A 790 DATA 33,36,23,23,23,46,45,61,54,6,0
7E 800 DATA 56,39,44,45,53,19,21,54,30,63,7,32,0
C4 810 DATA 45,50,30,63,7,32,44,39,12,12,45,6,0
02 820 DATA 30,54,36,5,40,40,32,63,63,7,0
F4 830 DATA 45,50,30,63,7,32,12,28,36,41,45,50,6,0
```

BOOK REVIEWS

```

18 840 DATA 39,35,12,45,21,54,47,54,51,59,63,0
5C 850 DATA 18,50,0
FA 860 : REM BOX
AC 870 DATA 36,36,45,53,54,54,62,36,36,36,60,54,5
4,54,62,63,39,36,36
25 880 DATA 36,44,53,55,53,55,53,53,62,39,37,63,0
F2 890 FOR I = 16384 TO 16596
A5 900 READ V
80 910 POKE I,V
85 920 NEXT
9A 930 POKE 233,64: POKE 232,0
21 940 RETURN
DF 950 REM PLOT CURVE
AD 960 : REM AXES
EF 970 GOSUB 1070
E5 980 : REM BORDER & GRID
E8 990 GOSUB 1240
20 1000 : REM NUMBERS
58 1010 GOSUB 1340
80 1020 : REM SCREEN COORDINATES
7F 1030 GOSUB 1660
97 1040 : REM CURVE
58 1050 GOSUB 1700
E9 1060 RETURN
65 1070 REM AXES
4A 1080 HOME : HGR : HCOLOR= 3: ROT= 0: SCALE= 1
87 1090 : REM Y
70 1100 HPLOT 140,8 TO 140,152
87 1110 FOR I = 8 TO 152 STEP 18
81 1120 HPLOT 139,I TO 141,I
AF 1130 NEXT
86 1140 DRAW 14 AT 132,8
4A 1150 HCOLOR= 0: DRAW 2 AT 132,8: HCOLOR= 3
AC 1160 : REM X
46 1170 HPLOT 20,80 TO 260,80
CF 1180 FOR I = 20 TO 260 STEP 30
18 1190 HPLOT I,79 TO I,81
45 1200 NEXT
8F 1210 DRAW 14 AT 267,80
78 1220 HCOLOR= 0: DRAW 1 AT 267,80: HCOLOR= 3
E1 1230 RETURN
91 1240 REM BORDER & GRID
5C 1250 : REM BORDER
E6 1260 HPLOT 0,0 TO 279,0: HPLOT TO 279,159: HPLOT
TO 0,159: HPLOT TO 0,0
1C 1270 HPLOT 1,1 TO 278,1: HPLOT TO 278,158: HPLOT
TO 1,158: HPLOT TO 1,1
98 1280 : REM GRID
5D 1290 FOR X = 20 TO 260 STEP 30
8F 1300 FOR Y = 8 TO 152 STEP 18
2F 1310 HPLOT X,Y
46 1320 NEXT Y,X
E3 1330 RETURN
84 1340 REM NUMBERS
F8 1350 : REM SCALE
CE 1360 X(I) = - 4 * XD:Y(I) = - 4 * YD
8E 1370 FOR I = 2 TO 9
7F 1380 X(I) = X(I - 1) + XD
96 1390 Y(I) = Y(I - 1) + YD
A9 1400 NEXT
12 1410 : REM Y AXIS
8C 1420 FOR I = 6 TO 8 STEP 2
89 1430 Y = 170 - 18 * I
98 1440 N$ = STR$ (Y(I)):L = LEN (N$):X = 138 - L *
6
93 1450 GOSUB 1570
88 1460 NEXT I
29 1470 : REM X AXIS
84 1480 FOR I = 6 TO 8 STEP 2
28 1490 N$ = STR$ (X(I)):L = LEN (N$)
8F 1500 Y = 87:X = - 10 + 30 * I:I$X = X - (L - 1) * 6
/ 2
85 1510 GOSUB 1570
70 1520 NEXT I
21 1530 : REM ORIGIN
98 1540 HCOLOR= 3: DRAW 14 AT 132,87
E8 1550 HCOLOR= 0: DRAW 3 AT 132,87: HCOLOR= 3
F3 1560 RETURN
E6 1570 REM DRAW NUMBER
C5 1580 FOR J = 1 TO L
49 1590 HCOLOR= 3: DRAW 14 AT X,Y
E8 1600 A = ASC ( MID$ (N$,J,1))
C7 1610 S = A - 45
13 1620 IF A = 46 THEN S = 13
43 1630 HCOLOR= 0: DRAW S AT X,Y:X = X + 6
88 1640 NEXT J
F1 1650 RETURN
71 1660 REM ACTUAL-TO-SCREEN COORDINATES
72 1670 DEF FN Y(V) = 80 - (18 / YD) * V

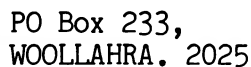
```

```

00 1680 DEF FN X(V) = 140 + (30 / XD) * V
82 1690 RETURN
59 1700 REM PLOT CURVE
E8 1710 DL = (X(9) - X(1)) / 200
54 1720 HLD$ = "OFF"
FC 1730 FOR X = X(1) TO X(9) STEP DL
1E 1740 GOSUB 220: REM COMPUTE Y
C4 1750 X1 = FN X(X):Y1 = FN Y(Y)
36 1760 IF E$ = "ON" OR (Y1 < 8 OR Y1 > 156) THEN HL
D$ = "OFF": GOTO 1800
7E 1770 IF HLD$ = "ON" THEN HPLOT HX,HY TO X1,Y1
F3 1780 IF HLD$ < > "ON" THEN HPLOT X1,Y1
83 1790 HX = X1:HY = Y1:HLD$ = "ON"
81 1800 NEXT
E5 1810 RETURN
18 1820 REM CHOOSE FROM MENU
A2 1830 : REM CHOICES
97 1840 GOSUB 1950
E6 1850 : REM CHOOSE
49 1860 VTAB 24: HTAB 17: INVERSE : PRINT "OPTION:";
: NORMAL : PRINT CHR$ (32):CLICK = PEEK (Z)
88 1870 GET S$
49 1880 A = ASC (S$): IF A > 96 THEN A = A - 32
C8 1890 PICK = 0
10 1900 IF A = 84 THEN PICK = 1
20 1910 IF A = 67 THEN PICK = 2
2F 1920 IF A = 81 THEN PICK = 3
A2 1930 IF PICK = 0 THEN 1860
F3 1940 RETURN
41 1950 REM CHOICES
40 1960 GOSUB 2030: REM CLEAR LINES
3C 1970 VTAB 22: HTAB 2
88 1980 FOR I = 1 TO 3
22 1990 INVERSE : PRINT LEFT$ (M$(I),1): NORMAL
AC 2000 PRINT MID$ (M$(I),2): SPC( 3);
A6 2010 NEXT
DA 2020 RETURN
8A 2030 REM CLEAR LINES
C5 2040 VTAB 22: HTAB 1: PRINT SPC( 39)
45 2050 VTAB 24: HTAB 1: PRINT SPC( 39);
EA 2060 RETURN
37 2070 REM TALLY Y
44 2080 GOSUB 2030: REM CLEAR LINES
7E 2090 VTAB 22: HTAB 14: INPUT "VALUE OF X ? ":X$
8E 2100 X = VAL (X$): GOSUB 220
4C 2110 GOSUB 2030
2A 2120 VTAB 22: HTAB 1: PRINT "FOR "; INVERSE : PR
INT "X": NORMAL : PRINT " = ";X1, "I
43 2130 INVERSE : PRINT "Y": NORMAL
18 2140 IF E$ = "OFF" THEN PRINT " = "; INT (Y * 100
+ .5) / 100
4C 2150 IF E$ = "ON" THEN PRINT " IS UNDEFINED."
7F 2160 VTAB 24: HTAB 14: PRINT "PRESS ANY KEY ";
73 2170 GET S$
F4 2180 RETURN
F7 2190 REM CHANGE AXIS INCREMENTS
A8 2200 DL$(1) = "X":DL$(2) = "Y"
37 2210 : REM ENTER VALUES
86 2220 FOR I = 1 TO 2
86 2230 GOSUB 2280
88 2240 NEXT I
FF 2250 : REM PLOT CURVE
4C 2260 GOSUB 950
F2 2270 RETURN
47 2280 REM ENTER DELTA
4E 2290 GOSUB 2030
48 2300 VTAB 22: HTAB 13: INVERSE : PRINT DL$(I);"--A
XIS INTERVAL:"; NORMAL : PRINT SPC( 15):CLI
CK = PEEK (Z)
C2 2310 VTAB 22: HTAB 29: INPUT " ";S$
47 2320 DL = VAL (S$)
8E 2330 IF DL < 0.1 THEN VTAB 24: HTAB 16: PRINT "TO
O SMALL !": GOTO 2300
53 2340 IF DL > 200000 THEN VTAB 24: HTAB 16: PRINT
"TOO LARGE !": GOTO 2300
48 2350 IF I = 1 THEN XD = DL
85 2360 IF I = 2 THEN YD = DL
F4 2370 RETURN

```





Books :

Sams Apple IIe Programmer's Reference Guide	29.95
Apple //c User's Guide by Lon Poole	28.95
Second Giant Book of Computer Games	9.95
Sams Introducing the Apple //c	29.95
Out of the Inner Circle (a hacker tells all)	21.95
Silicon Valley Fever (history of the Valley)	39.95
The Graphic Macintosh Book	17.95
Winning at the Races Using Your Computer	12.95
Inside the Apple IIe (a best seller)	39.95
Inside the Apple //c (by the same author)	39.95
Basic Business Application Programming for //c ..	33.50
Macintosh Microsoft Basic	35.95
MacPaint Drawing Drafting Design	29.95
Applesoft Subroutine Cookbook	37.95
McGraw-Hill Personal Comp. Prog. Encyclopedia ...	164.95
Applied Apple Graphics	34.95

New releases from different companies - this month it's First Star and Data Soft.

The Island Caper - sequel to Spy V Spy	39.95
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Romper Room's I Love My Alphabet - for the babies	32.95
Romper Room's I Love My Numbers - this one too ..	32.95
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The Dallas Quest - put yourself in JR's shoes ...	39.95
Pole Position II - only flags are chequered	39.95
The Goonies - missed the film? try the software .	39.95
Alternate Reality - wizard type adventure	39.95
Zorro - Dug Fairbanks not George Hamilton	39.95
Mr Do - more of the arcades into the livingroom .	39.95
Elevator Action - lottsa ups and downs	39.95

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High Tech Silicon Valley A Window to the Future

To the uninitiated Silicon Valley is yet another nonsensical Yankee term to describe Walt Disney's latest tourist attraction/money earner. However, Silicon Valley is now the centre of a vast universe, the pivotal point of anyone who is serious about making it in the computer world.

From your average 14-year-old arcade addict's bedroom, to the stockmarket halls of fame, to the Porsche boardrooms of West Germany, people are taking notice of the latest phenomena in the Computer Race Age.

In a microcosm that has spawned 4,000 new companies in the last 20-30 years, each grossing five million to five billion in sales a year, there lurked yet one more unturned stone. And, you guessed it, someone was there who felt obliged to exploit the untapped resource.

This time, for our immense delight.

Yes, I'll come to the point shortly.

Written a book! About the ins and outs of Silicon Valley, perhaps the most astounding and fascinating high tech industrial microcivilization ever to have emerged from the dust of the Industrial Revolution.

Gene Bylinsky is a well known scientific/technological/medical reporter. (My Who's Who of the USA said so anyway.) He has graced the pages of such renowned and revered magazines as The New York Times Magazine, Wall Street Journal, Science Year, OMNI, Science Digest, The Reporter.

His coverage has ranged from gene-splicing to semi-conduction chips, space stations to brain hormones; Gene pioneered reporting on Silicon Valley. Won 17 awards, none for golf.

Gene's book landed in my lap with a

loud bang. It's big. But so is the industry that spawned it.

With a superb photo essay from front to back by Charles O'Rear, a famous taker of snapshots (13 major articles for National Geographic) and obscure help from Mr L. Bender, a bald logo designer, we are shown a marvellous world of High Tech. (See our front cover for an example of this photographer's art.)

From glossies of an insect's brain, to an electron microscope's view of the atomic structure of a semiconductor. From Persian rug look-alikes of photo masks for LICs to the clubs where a million in the keycard is not enough. We are regaled with success story after success story. The new 20 year old millionaires and the has-beens are all there.

While not offering a scientific textbook, Bylinsky displays a remarkable ability to almost lose you in the high tech jargon and then explain it all with a simplicity that evidences a profound depth of understanding of the world he orbits.

Bylinsky doesn't dwell only on the Pizzy world of three figure IQ innovation but ventures into the mundane, the traffic jams, the housing shortages, supermarkets and grass roots of the different people who live, work, make money and lose money in Silicon Valley.

A two page spread reminiscent of a Vaucluse aerial shot, complete with three acres of houses, private pool, tennis court, and Porsches in every yard, is backed by a snap (on two pages) of some "Westy" street with Geminis and no street lights. Billboards, crowds at the footy and traffic jams, all make up a well

rounded out pictorial. The overall effect is awe inspiring.

The spinoffs from the original mainline computer and silicon chip industries by Hewlett Packard in 1937 and various associates (of radar fame) have been never ending. Bylinsky examines the major items.

Lasers, their place in industry, medicine, defence, sewing eyeballs and welding scar tissue on endometriosis victims. The satellite communications for the space junkies. A picture from The Last Star Fighter fully photographed by a computer. The model was "flown" through awesome imagery created on a graphics computer

High Tech a Window to the Future is an industrial spy's dream come true. Page after page of detailed logic chips, RAM chips, mega pals laid out there in bright five colour print. The latest in semiconductor technology, in etching, in photographic reproduction and imagery are discussed and pictured.

Well bound in true high tech fashion, the book can take a proud place on any computer addict's coffee table. A sample of the industry that we get a prolonged ogle at is encased in plastic right there on the front cover. Yes, an AM8502 cathode ray tube controller state of the art circuit by Advanced Micro Devices. The one used in your new video screen.

So if you want to gaze in awe at an insect's cerebellum, gasp at the internal structure of a crystal, ooh-ah at a ceramic boat sailing into a blast furnace ferrying wafers, or get dizzy deciphering logic Integrated Circuit Photo Masks (say that after a few daiquiris) this book is for you.

Retailing for a modest \$39.95 and distributed by Weldon-Hardie Pty Ltd, it is a true investment. A must for anyone who takes oneupmanship seriously. 🍏

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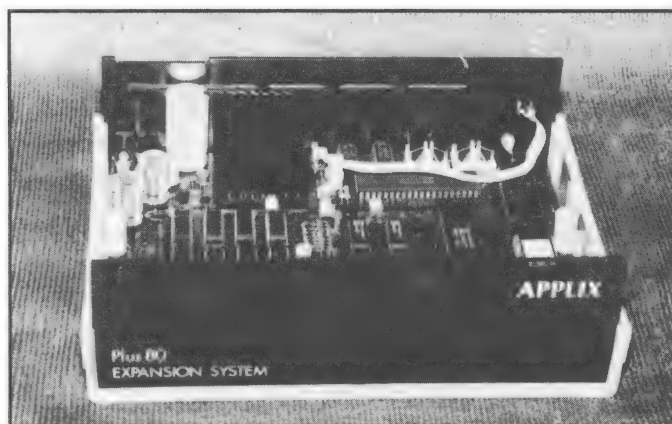
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64K RAM \$499

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26KK and CP/M \$765



Comparison of Applix CP/M and Cirteck CP/M

Feature	Cirtek	Applix
easy installation	NO	YES
extra RAM	NO	YES
keyboard enhancement	NO	YES
utilities software	NO	YES
parallel printer port	NO	YES
pages in manual	4	74
local product	NO	YES
cost	\$299	\$499-\$775

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Gareth Powell

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Reviewed Apr/May AAR.
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The first interactive mystery to use the world-famous criminal lawyer created by Erle Stanley Gardner. It also represents a major breakthrough in interactive fiction: the cooperation of the characters and jury changes as a direct result of your interactions with them.

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APPLE IIe & IIc

(These mouse-driven programs were reviewed in November 85 *Australian Apple Review*)

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The Worm in the Apple

It sounds like a contradiction in terms but Worms are incurable stickybeaks. Wending my curious way around the office, I came to the desk of Andrew Farrell and found on it a new type of magazine produced in the United States by Activision. On the cover it said "The magazine for the next generation" and the theme of the issue seemed to be that human like beings have actually been found living inside computers.

Which may well be true.

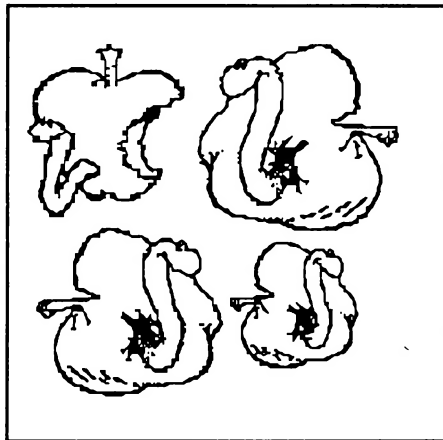
This is basically a disk magazine which takes the idea of little leprechauns being inside a computer and pursues it to its absurd limits. With the magazine is a disk and a little book which is called *A Computer Owner's Guide to Care of and Communication with Little Computer People*. To make sure you understand, it is also done in French and German.

I am not sure that I enjoy this idea as much as I should have. It appears to have been sent to young Farrell by Imagineering, a company not noted for its sense of humour. They probably have a clearer idea of Andrew's mental processes than I have. Indeed, they most

certainly have. Perhaps the people at Imagineering know this is the sort of thing that Andrew finds titterable. Any computer writer who still goes to bed with his Teddy bear is clearly suspect.

Inside the magazine are some interviews with real people asking, "Who do you think is living inside your home computer?"

Jan Marsella, candy-maker of Ogden in Utah, says she thinks that living inside an Apple home computer is "somebody



cute. Nice. Cuddly. Smurfy. Warm and friendly. And fuzzy and fun. Probably somebody you'd like to cozy up with. Like a confidant - someone you could share your absolute innermost secret desires with ... things you've always wanted to tell someone ... somebody very, very ... well ... dangerous."

As I occupy real estate which is within the confines of an Apple IIe I feel that that description may well apply to me - except for the bit about "fuzzy". Lady readers who would like to get in touch with me directly please send a plain stamped envelope and I will send,

by return mail, an autographed photograph.

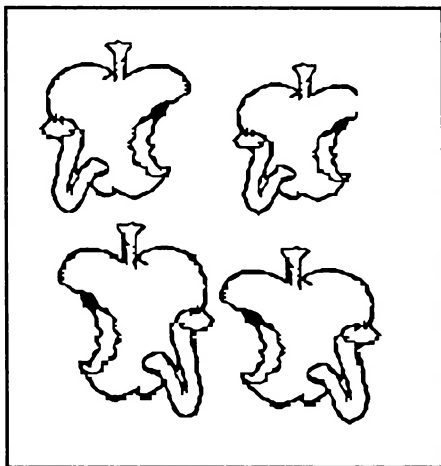
When this Worm was but a young lad and tried to work in publishing he met Kevin Weldon who at that time was involved with Paul Hamlyn running a publishing company. Since then he has gone on to become the biggest publisher in Australia and the Worm has gone on to become - a Worm.

I've just seen his latest book which is on computers. It's called *High Tech*. As always with anything that comes from Weldon it is in the most luscious coffee table format. There are more beautiful pictures there than you could ever shake a stick at. And each of the chapters covers an area of computers in which we would all be interested. Sadly the pictures get in the way of the text. This Worm finds that reading about computers is one thing, looking at them is another.

However, on page 121 of the book appears a full colour portrait of a member of my family. The heading is "A spaceworm wiggles in Silicon Valley". I am sure that the successful Mr Weldon won't mind if I suggest this picture would have looked better on the cover. We Worms do have a certain elegance about us.

I find this a little bit of a worry. A Melbourne based software house which is called Fletcher DP Services has bought a 50% holding in a board games retailer and developer called Good Move Games. Nothing in itself wrong with that.

The shop is located in Brighton in Victoria and has over 750 games for all ages. The managing director, Mark Fletcher, said "With the video boom slowing and cinema prices rising, the time is right for people to begin to interact again. Games are ideal and inexpensive for this, given their life".



UNMITIGATED GALL

Somewhat ungrammatical and not I think true.

It would be difficult to find greater value for money than a computer game which, as opposed to a board game, allows you to play in onanistic splendour against the computer. Try playing Monopoly all by yourself on a board and you'll realise how frustrating it is.

Mark Fletcher boasts that he will not be selling one computer game anywhere in the store. This Worm looks forward to the press release which will arrive in the very near future saying that Good Move Games is, after all, stocking computer games.

This Worm, poor though he may be, would be willing to take a reasonable bet at good odds that this will be the almost certain outcome.



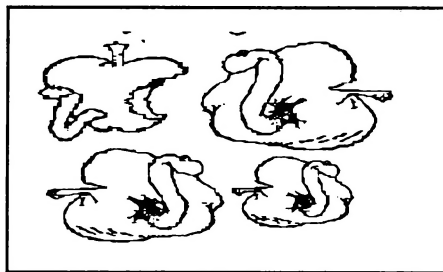
I never cease to be amazed by claims that are made by vendors to the public - presumably in the hope that the public is going to believe everything they read. A software has just passed this Worm's lowly gaze and the blurb with it said it took 62,000 man days of research and development. Forgetting for the moment the sexist tone of that remark - Worms are, of course - unisex - one wonders whether it is based on fact. Take it that the average worker in Australia puts in about 20 days a month - we're allowing here for holidays, sickies, and other good excuses for not fronting up and punching the bundy. In which case this took 3,100 months or 20 odd programmers over a year to create. Having seen the program this Worm's credulity is stretched to the utmost.

The program is, indeed, attractive. The program is, indeed, fairly bug free. And the program does everything it is supposed to do fairly well. But the idea that one mad boffin sat down for 32 years to try and create this program simply doesn't make any sense at all. And the idea that 32 programmers could be put together and work in harmony for a year

to produce the same program also beggars the imagination. My guess is the people who write the advertising have nothing to do with the real world of programming. And, as a result, they get involved in what is called the decimal point push when it comes to making claims about their product. Or failing that, the standard of programming has fallen, indeed, on parlous times.



Many years ago when I was trying with a tremendous lack of success to become a business tycoon - worms are not cut out for the job - I discovered a series of programs published by Six"S" Business Advisory which is based in Geelong. Their programs were magnificent at



analysing a company and working out whether it was operating at a real profit or not. After I had run my company's books through the program I, poor, humble, dejected and abashed Worm, gave up business altogether. I realised that I was never going to be Robert Holmes A'Court. Nor yet Alan Bond.

Now I have got hold of a book from the same company called *A Common Sense Guide to Selection of a Computer System*. And an excellent book it is too. It contains phrases in it with which I totally agree. For example "The elimination of most mechanical parts in a computer has made preventative maintenance virtually redundant on most components apart from peripherals such as printers and perhaps disk drives". This is something that services people have never been overkeen on seeing widely publicised. On the other hand the book itself begs certain questions. First of all

only 28 pages of it are devoted to helping you discover the right computer. The other 28 pages are devoted to telling you about the company's software. And at times the English is rather less than totally felicitous. For example in trying to advise you on the sort of dealer that you should be working with they say "likely where you obtained this booklet is one of those locations". Likely indeed.

Dealer Directory

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- Review, Australian Apple Review, December 1985

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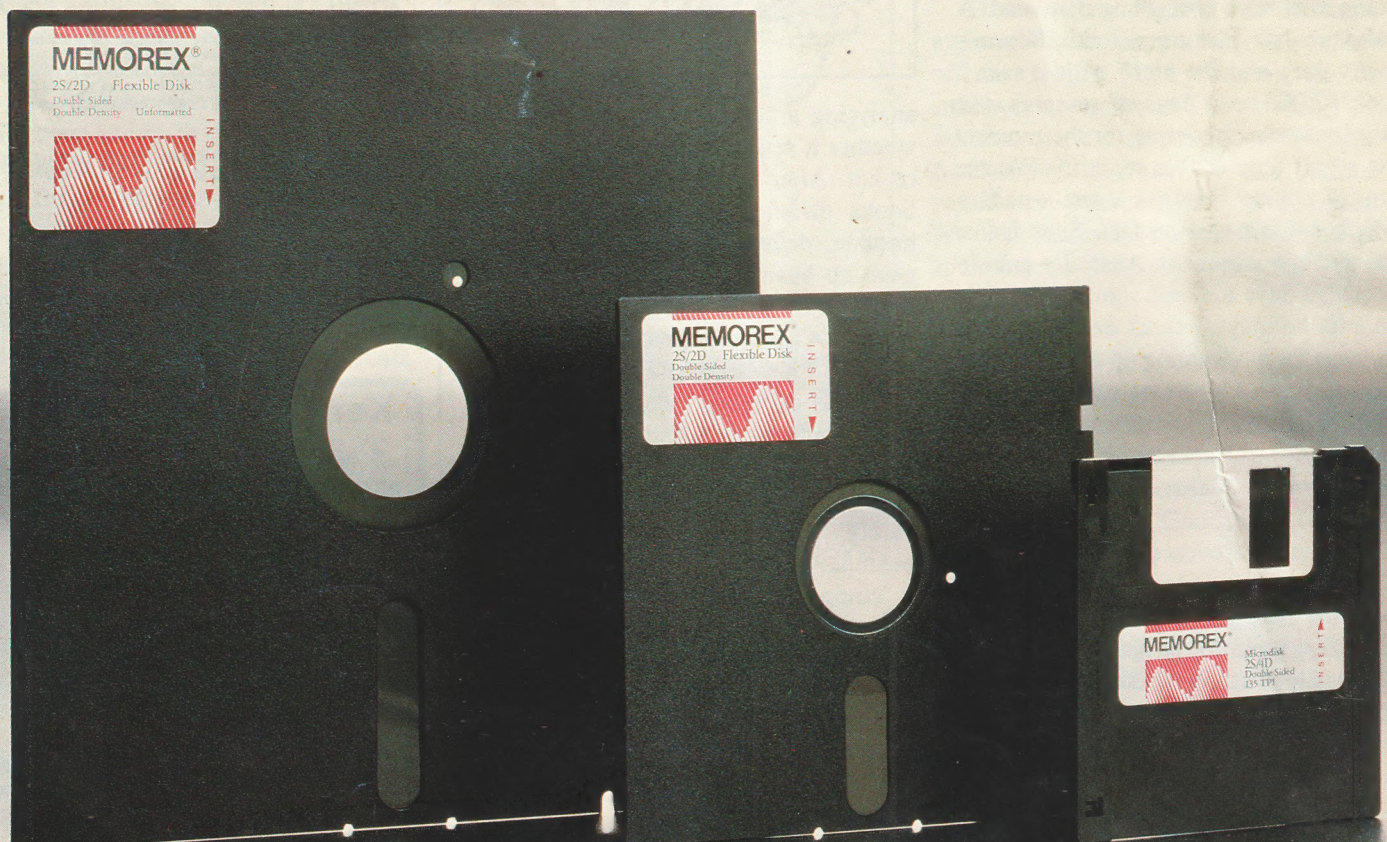
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